Logan	Keokuk Burlington		100-150
Black Hand	Kinderhook		50-60
Cuyahoga	Mauch 40 Berea 200-400 Sunbury or base	upper	240-440
Berea grit		Cleveland	50-60
Bedford shale		Lower	50
Cleveland shale			50
Erie shale (Ohio shale) Huron shale			

Anderson Co.

557 Soil } John M Walker 1856
558 " } Near Lawrenceburg.
559 Sub } Bluel. formation.

2262. Water. Bored Well. 80 ft deep.
Sent by Henry S Carl.
Lawrenceburg. Oct 2. 1883.

3043. Water. Spring. 1870
James McBrayer's place.
Near Lawrenceburg
Brought by Mr. K. R. Forston.

484. White Oak ridge. rock. Mr. Hall's farm.

485 Limest } Leptaenal. on road from
486 " } Alexander Julian to Lawrenceburg.

Bath Co.

804. Soil. Best Hemp soil. 1½ mi SW of Sharpsburg. Lower Sil. 1861.

809. Soil. } Mr. Suddutt's farm. 1½ east
810 Soil } of Sharpsburg. Bluel. 1861.
811 Sub }

Boone Co.

565 Sril } Sandford farm. 1856
566 " } Near Union.
567 Sub } Blue limestone.

1697. Clay. 3 mi. West of Burlington, sent by W. W. Walton. 1876.
= SW of Burlington on Burlington Belleene pike. 1/3 mi before reaching Belleene precinct. ?

Bourbon Co.

568 Sril } Capt Wm. P. Hymes' farm. 1856
569 " } On divide betw. Houston + Cooper's creeks. W or NW of Paris.
570 Sub. }
571. Underclay with capax + testud.
572 Limest. with capax
573 Shell l.

574 Sril } Wm Buckner's farm. 1856
575 " } Betw. Stoner + Hinkston creeks on Cane Ridge. E or NE of Paris.
576 Sub. }
577 Underclay Favosites. lynx. occidentalis
578 Crystalline l. quarry below woods
579 Chaetetes l. below woods pasture.

1638. Limest. Cane Ridge. 5 mi. E of Paris. Used for foundation of Court house at Paris. 1875 Sent by James Stevenson.

822. Magnesian l. Loose slab. where sils 574 & 575 were collected. William Buckner. Cane Ridge.

Boyle Co.

580. Soil. Thomas Read's 1856.
woods pasture. 1 mi. from
Danville.

Bracken Co.

823. Salt Water. Big Bracken creek.
Sent by L. G. Bradford. 1861.
824. Sandstone. Mudstone. on road
from Dover to Augusta. Lm Sil.
1861.
825 Limest. } Hillside Nexposure. near 1861
826 Soil } Augusta. L J Bradford farm
827 Sub. }
828 Soil } Near Locust creek. Same farm

829. Soil Dr. J. B. Bradford. Near
Augusta 1861
830. Soil. Clay with Indian bones. near
Augusta. 1861
831 Soil } James Dunnivan farm.
832 " }

Bullitt Co.

587. Marl. from line betw. Bullitt
and Spencer Cos. in
Fossiferous Beds. 1856

588. Marl. from NE part of Bullitt
Co. Locality practically
unknown. 1856.

494. Magnesian L. on road from
Shepherdsville to Mt
Washington. Lm. Sil.
Is this correct?

Campbell Co.

0590 Soil } Benjamin Beall's land.
591 " } Alexandria.
592 Sub } 1856.

1315. Marly Shale. ¼ mi. from Newport. on Alexandria pike. 1875
Between Newport & Bellevue.

01316. Marl from Siliceous Mudstone. 10 ft. from surface. Gallows Gap. 1875

01320. Sandy Ferruginous clay. 1875
3 ft from surface.
Mt Vernon road, ½ mi from Alexandria pike.
Reddish brown. glacial?

1321. Ferruginous clay. Glacial?
Side of road. 1 mi. N of Grants Creek. North head waters of Philips creek. A branch 1875.
follows the road north.

1322. Moulding sand. Glacial or Fairmont? 1875
½ mi. NE of Newport Reservoir.
See map

1324. Soil. Gen. G.B. Hodge farm 1875
Flat Woods. Waters of Philips creek. 1½ mi SE of Grants Lick.
a few pebbles of milky quartz.

1325. Same locality as 1324. also soil. 1875. about 1 mi nearly S of Granite Lick P.O.

1326. Same 1327.

1327. is said to have siliceous mudstone beneath. Therefore 1324-1327 may be Fairmont soils.

1328. Spur of hill 60 feet above soils 1324-1327. 1875
Same locality as last

1329 } Soil. Yontsey's land. 1875
8 mi. from Newport.
Alexandria pike.
1330 } Subsoil.
1334. } Limestone. full of fossils.
1 mi S of Cold Spring P.O.

1331. Soil. with chert. Covers mudstone
Upper waters of Pond creek.
near Pond creek P.O. on new pike. 4 mi SW of Alexandria. Claryville P.O.? 1875

1335 } Marly shale. 2 mi S of Newport.
Licking 3 mi. creek. 50 ft above high water mark. 1875

1336 } Same locality. Marly shale.
Beds are 30 ft thick. These come 60 ft above high water.

Carroll Co.

593 Sil } Walton Craig's farm. 1856
594 " } ½ mi. from Gilbert.
595 Sub }

Clark Co.

2468. Sil. Level tract on W. H. Prewitt farm. on divide betw. Hinkston & Lulbegrud creeks. On Middle Hinkston. 1884. Crawfish Lands.

876 Magnesian L. Building stone. quarry at mouth of Lower Howard Cr. Low. Sil. 1861.

877 } Limest. Judge Simpson's farm. near
878 } Winchester.
879 }
880 }

881 Sil } Wm R Duncan farm. near
882 " } the Simpson farm.
883 Sub }

500 Sil } Dr. S. D. Martin.
501 Sub }

Franklin Co.

Fayette Co.

Fleming Co.

972. Marl, greenish + reddish brown, at junction of Upper + Lower Sil.

978 Sil. Delthyris lynx, beds. Mr. Fitz-
979 " Gerald's farm, northern part
780 Sil. of Fleming co.

Gallatin Cr.

619 Sil } Near Big Lick creek
620 " } Blue limest. Sil 1856.

Garrard Cr.

621 Sil } J. S. Hoskins. forks of Pike.
622 " } Modesta + plicatella.
623 Sub. } 1856.

624 Sil } W. Smith's farm. 1856.
625 " } Bryantsville.
626 Sub. }

985. Limestone. Upper Silurian. Burdett's bend.

986 Sil } Chas E Spilman 1 mi E of
987 Sub. } Dicks river. on [illegible] line.

988 Sil } Chas J. Spilman. 1 mi
989 Sub } E of Dicks river.

Grant Co.

627 Soil } Hayden Kendall's farm 1856
628 " } 7 mi fr. Williamstown
629 Sub } on Covington pike.

630 Soil. } Moses Theobald farm.
631. Undst me } 5 mi N of Williamstown.

990 Marl, alternating with limestone. Moses Theobald farm.

991 Shale from same as 991.

Harrison Co.

646 Soil } James Miller. 3 mi S of
647 " } Cynthiana.
648 Sub }

Henry Co.

649 Soil } John Hornback. 1856
650 " } 2 mi S of New Castle.
651 Sub. }

1577. Marly Shale. Cut of Cumberland + Ohio R R. Eminence. 1875.

Jefferson Co.

2916. Water. Well. 1900 ft. 1875.
SE Edmunds.
W. side of 3rd St. between Weissinger + Magnolia Streets
Louisville Ky.
St Patrick's Well.

1065. Variegated l. near base of Up. Sil. 3 mi from Middletown on Shelbyville road.

1066. Hydraulic l. Chenowick creek, Upper Sil.

1068. Limestone Bonded building stone, 75 ft above Dean Marble. From Madison Indiana quarries. Used for Courthouse at Louisville 1861

1069. Marl from Chenowick cr.

Kenton Co.

667 Soil } Armstrong's farm. 1856
668 " } 5 mi. SW. of Covington.
669 Sub }

2331. Water. Spring. at Big Bend tunnel. 140 rods from N end of tunnel + same distance from Grant's Station. 1883.

1581. } Siliceous grit. at first toll gate
1582 } 2 mi. from Covington. 1875
Same. used for molding sand.

1583. Clay. Lexington pike. 2 mi. S of Lexington. just below grits 1581 + 1582 which may be glacial.

Madison Co.

2059. Mineral water. Well. 750 feet. Dr. J. Reed. Begun in Dev. Black shale, near Paint Lick. 1878.

2210. Water. Well. 126 feet. 1879
150 ft S of railroad track at Clear Creek station. about 250 ft. W. of Silver Creek, in a bottom.

2486. Soil. } William Gibson. near
2487 Sub. } Richmond, close to Lancaster pike. 1884

2488 } ~~Soil~~ } Steve Walker. near his farm
2489 } Sub } ~~200 yds to right of Paint Lick pike.~~ Black shale

2490 Soil } S. Fitzpatrick.
2491 Sub } Near Walnut Meadow and Big Hill turnpike, 4 mi. NW of Berea. Middle Hudson. 1884.

1123. Magnesian. on Mr. Covington's farm. where red bed soil has collected.

1126. Well. Jouett. Spilman. 18 ft. Paint Lick.

1127 } On slopes below junction of
1128 } Black Shale + Magnesian
1129 } limestone. Covington farm at Elliston.

Marion Co.

673 Sil
674 "
675 Sub } Daniel Everhart farm 3 mi W of Lebanon. 1856

Marion Co.

1130 Earthy portion between D. lying beds. edge of Marion and Fleming Cos.
1131 Oxydated part of 1130
1133 Limestone.

1132. Limest
1134 Sil
~~1137~~ " } hillside near Dover 150 ft above Clear river.

1135 Sil
1136 Sub } Near foot of hill side near Dover. Langstone Tabb's land.

Mercer Co.

678 Sil
679 "
680 Sub } 4½ mi SE of Harrodsburg.

681 Sil
682 "
683 Sub
684 Under clay
685 Limest. } Chetetes beds of blue limest. near Cornishville. Cover- lying bird's eye limest. mi.

1139 to 1147 { 1144 = 3 mi W of Harrodsburg Vandevere farm.

Montgomery Co.

2500. Building stone. 2 ft thick. Dr. L. C. Jeffries. NW part County. 60 ft above Aarons run.
2501. Middle Hudson sil Neck
2502 Sub. Aarons run.
2503 Sil
2504 Sub.

2505 Sil. Joshua Clings farm.
2506 Sub. near Mt Sterling & Clingsville pike. 6 mi. from Mt Sterling. Upper Hudson. on O. lynx beds.

2507 Sil
2508 Sub } opp. 2500-2506. on Gen. Dick Williams farm.

See later pages

Nelson Co.

714 Sil } Beauchamp's land 1856
715 " } Chaplin creek.
716 Sub } SW of Ashes creek.
717 Underlay
718 " } in the Orthis lynx

720 Sil } Gutbry farm. near
721 " } Bloomfield.
722 Sub } O. lynx.
723 Shell earth under O. lynx earth.

724 Sil } Maj. Minor. Near
725 " } Bloomfield.

729. Sil. Shell earth. R B Grigsby 3 mi from Bloomfield. near head of Simpson creek.

2394 Ferug. l. } S P Stiles farm. 1883
2395 " " } Cumberland SS & sh.
2396 Sil } 4 mi. N of Bardstown.

1168. Fenestella stellata. Bardstown. coral itself.

Nicholas Co.

730. SS. & Sand & gravel. prob. glacial. Blue Lick Battle Ground. Cedar Hill. Near Lower Blue Lick Spgs.

731. Mudstone near Carlisle. Probably base of Middle Eden. Clifton notes.

732. Mudstal. Cut of RR near Carlisle. W & S W of town.

733. Water. Lower Blue Lick Spgs.

2068 Lower Blue Lick Spgs.

3221. Water. well. 145 feet. at Deering Camp Grounds. Parks Hill. Bored 1893. Well begins near top of Nicholas bed.

1196. J. M. Turner. Sil. Waters of Stoney creek.
1197 Sil
1198 Sub.

Oldham Co.

734 Sil } A. Hawley farm.
735 " } Fauxtella beds at
736 Sub. } junction of Upper + Lower Sil.

737 Sil Ashey white soil.
7 1 mi. NE of La Grange, in a hollow. derived from a mudstone near base of Upper Silurian.

1201. Limest. from which ashy soil was derived. 1 mi. NE of Oldham.
1202. Hydraulic. of Curry's Fork. of Floyd's creek.

Owen Co.

738 Sil } Green Threlkeld farm
739 " } 4 mi. fr. Owenton.
740 Sub }

741. Ss. Near Benj. Hardin.

742. Limest. Nucula sp. Headwaters of Cedar creek near Harmony.
1203. Marl or shale. from spring Waters of Dickey's creek. 1½ mi. from Ben. Hayden's farm.
1204. Sil. } After ascending hill from
1205 " } Harmony to Stamping
1206 Sub. } Ground. S edge of Owen Co.
1207. Sil } Weston Jenkins
1208 " } 2½ mi. from New
1209 Sub } Liberty.

Pendleton Cr.

— Pebbles near Cynthiana and Falmouth pike. in Pendleton Cr. = Glacial?

743 Sril } Wm Ellis
744 " } 6½ mi N of Falmouth
745 Sub }

748 Sr
749
750

Scott Cr.

748 Sril } James F Robinson
749 " } 3/4 mi f. Georgetown in Elkhorn Cr.
750 Sub }

1224. Shale. Flings forth of Big Eagle creek.
1225 Windstone from same region.

Shelby Co.

2436.- Sil. Jeptha Knob. 5 mi. SE of Shelbyville. Up. Sil.

2437. - Limestone. Upper Sil. Jeptha Knob. 1883.

751.-Marl. Chetetes beds.

752 Sil } Addison Jesse's farm.
753 " } Lewis's Chetetes +
754 Sub } Leptaena beds in SE part of Co.

755 } Sil } Wm Crabster. on Bull-
756 } " } skin Creek. 4½ mi from
757 } Sub } Shelbyville, on Louisville pike.

Spencer Co.

2438. Phosphat. Lower part of Upper Hudson River beds 1883.

2439. } Sil. D. B. Wigginton farm.
2440 } 2 mi N of Fairfield. Upper
Sub } Hudson near top of lying beds, 1883.

758 Sil } George Beam
759 " } Betw. Beech + Bashear
760 Sub } creeks.

761. Marl in blue limestone. Near Taylorsville.

Trimble Co.

764 } Soil } Henry Tyrio farm
765 } " } 1/4 mi E of Bedford
766 } Sub } Cover Magnesian
earthy & cherty beds
of upper Sil.

1251. Fossil Murchisonias.

164. Marl. like the Conchitic Marble
of W Dean at Marble Hill,
On Cedar Creek, at mouth.
Elkhorn river.

Washington Co.

770 Soil } Spinifer cultrus + Septae.
771 " } na beds.
772 Sub } Stephen C Brown.
Pleasant Grove Settle
ment. a field cleared
by Gen Walton.
& C Brown.

773 Soil } Wm Lynton.
774 " } SW side of Beech
775 " } fork of Salt river.
about Mackville and
Williamsburg.

Cincinnati. O.

2. p. 375. Ohio. Vol I.
Blue shale, Brighton Hill.
3. Blue shale, Sycamore St Hill
4 Drab shale " " "
5 Fossiliferous shale " " "

Adams Co.
Billy Pennywitt.
85.– Peppel. Three miles E of Manchester, on shelving bank of Ohio River. No bluff here. But hills are back of it. During high water the top of 2 miles would be submerged 15-20 ft = from water level up 20 ft.

not Quaternary

83-84. From quarry just NW of Manchester which is above ordinary high water but which was submerged 10 ft in 1883.
83 = upper 21 ft Bellevue.
84 = next 12 ft. top of Fairmount
Go out Broadway over the bridge at junction of Brooklyville & Aberdeen pike.

Richmond beds.
1. p. 374. Vol. I. Ohio.
Lebanon beds. Waynesville.

1. p. 375. Vol I. Ohio.
Fossiliferous shale. Waynesville.

Montgomery Co.

1148. Sol R Apperson. Not Star-
1149 " ling 1861. D. by my lands
1150 Sub.
1151 Unclaimed

Clinton inserted at Dunnville Wisc.
Wykoff formation.

14. Cortis bed at Spring Valley Minn.
Cortis occidentalis
(30 ft) Leptaena micrstata typical
Rhynchonella anticostiensis.

13 Leptaena bed. West of Wykoff Minn.
Cortis antiquadrata (10 alex)
(30 ft) Pleurotomaria recedens Sand, (14, 14 alex)
Rhynchonella pentamerella
= Willoughby Bill. fauna.

12 Orthoceras bed. Hammond in Iowa.
Cortis emaciata
25 ft) Murchisonia rufori
Cromedonta calvin
Cheirodopelmus sp.
Orthoceras
Cyrtoceras
Dipleurophyllum
Cortis tenuistriata
Cortis insculpta
Cortis antiquadrata
Strophomena trilobita (11 alex)
= flexuosa Billings (11 alex)

11. Dipleurophyllum bed. Orange Minn.
Arafhens 3 species.
Bellerophon bilobatus
20 ft) Cyrtolites ornatus
Crinoidea
Dipleurophyllum
Grapta.
Last two, 11 + 12, = Maquoketa formation

Dr. Winchell's bed.
10. Triplecia bed. Scales Mound. Ill. (Adams)
Triplecia ulrichi
30 ft) Pleurotomaria fracerosa
Cortis antiquadrata
Cortis tenuistriata.

9. Michinea bed (Winchell's)
Michinea cuneata.
35 ft

8. Hippadeas bed
(alex 5) Hippadeas galenensis
30-35 ft) " burlingtonensis
Pleurotomaria gibbosa.

7 Camarella bed.
30 ft Strophomena trilobita from here up.
Zygospira modesta

6. Cortisina bed.
(40 ft) Cortisina americana.
Pleurotomaria anticostiensis

5. Fucoid bed.
Chaetetes lycoperdon
18 ft) Prasopora ovata
Pleurotomaria sericea
Cortis antiquadrata
Rhynchonella indetermina
in alternation
Prasopora

4. Stictopora bed.
Stictopora matutensis
(55 ft) Rhinidictya.

3. Stictopenella bed.
Stictopenella fenestrata
(15 ft) Rhynchotrema arkansiei

2. Bellerophon bed.
(15 ft) Bellerophon micronotus
" bilobatus

1. Buff limestone.
Rhynchotrema orientalis.
(25 ft)

Arthrostylus Trenton form
from 5 up.

Arthrostylus + acuto-lineatus absent.

Illaenus in all beds of Galena.
absent in Platteville.

Arthrostylus Hungerfordi.

Arthrostylus vagatus.
8
7
6 very abundant
5 very abundant
4

Arthrostylus medius 200 ft above Galena
Exposed, Lafayette Co.
Median Beds
Not in Minnesota.

Arthrostylus gracilis 13

Arthrostylus tenuis

Arthrostylus corpulentus 13

10

Arthrostylus [illegible]
= macrurus
13
12

Arthrostylus perrectus
10

Arthrostylus fertilis
10

Arthrostylus multicostatus 12

Cortinés

Multisecta, 2 primary median fólíc[illegible] on fertile valve, branch about 3 times

vergata = ancestor of multisecta?

medii, Stronger median fold & veins than multisecta.

ignesta double median folication on fertile valve

tenera double median folication of fertile valve

Cortinés Relationships

tenera
ignesta
medii
multisecta

= single dorsal folication
double median "
Connection of circul.
Surface ornamentation
as in medii & ta

This ornamentation found also in { D. vergata & D. corporalis

corporalis

{ Amercata single median folication
tion. Surface with out ornamentation to contrast marking of multisecta.

{ Pomata
fatibis

Pleurobrachia

Necedens. Pal. Ohio. Vol. I. p. 79.
pl. 5. f. p. 3 a-e. = Mnemiopsis limeri.

On center of necedens. = f. p. 3 f-h.
150 ft above coal.

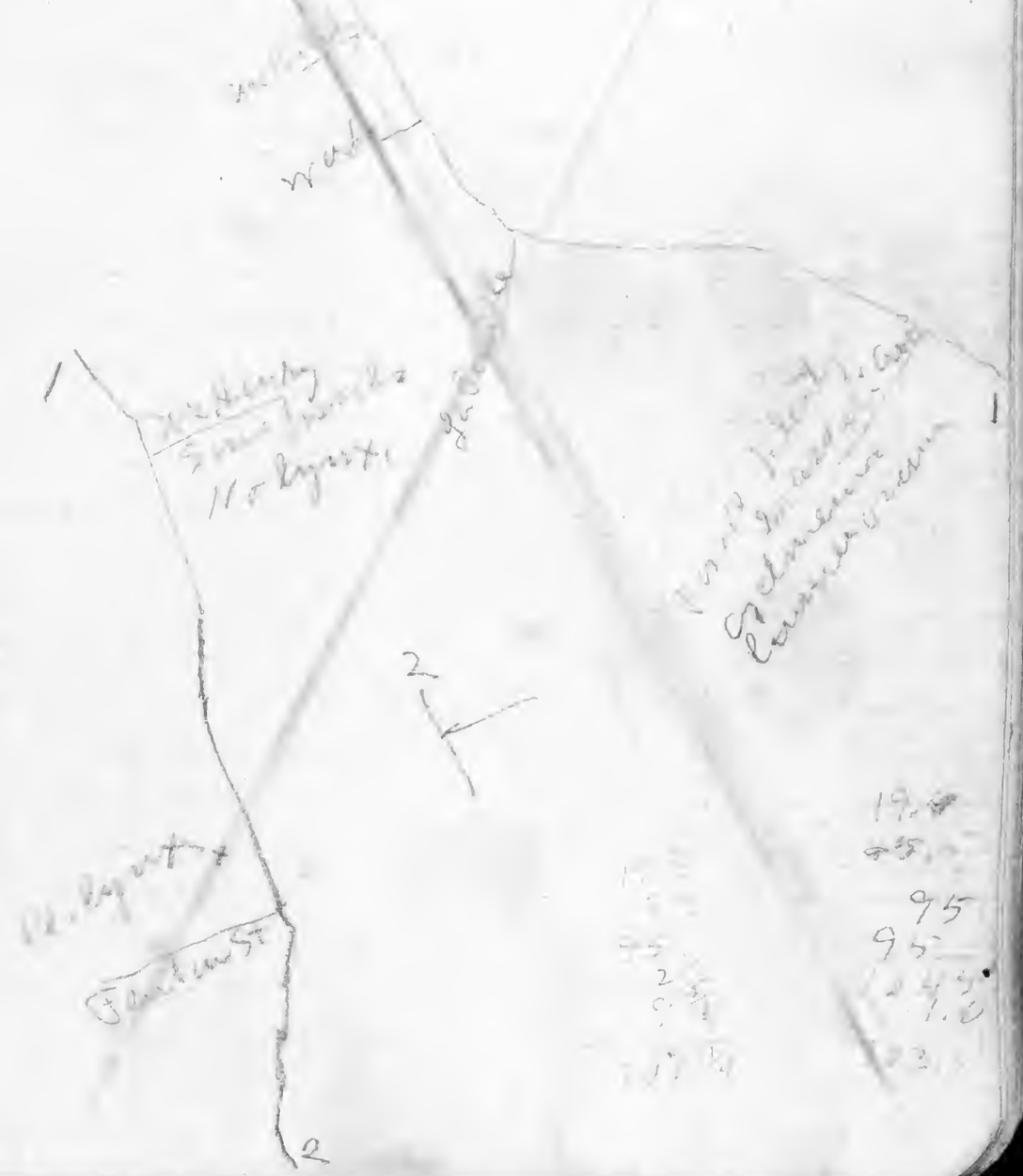
aspera. = Some Ctenophore stalks.

(Ctenophores are fish excretion
[illegible] not fish. [illegible] as named
under [illegible] Mr. Chapman
Rhizo. [illegible]
Pilby. [illegible]
[illegible] of [illegible] Ctenophores

Hand book of Trees of Northern
United States and Canada.
R. B. Hough.
Lowville N.Y.
published by author.

Harrison Ave + McKinley Ave.

Dinotherium retroversum
Tetrabelodon obliquidentis



SW of Oxford, Ohio,

Dimitrodus [illegible]
Pleurodontagama [illegible]
Hedeoscolex mazonensis 904 ft.
Stigmaspondylus petrolicus is very abundant, but not [illegible] in collecting [illegible] and in the underlying part of the [illegible] beds.
Trimerorhachis [illegible] called a [illegible] form.
Leptorhachis [illegible] very abundant below Hedeoscolex mazonensis about 3-4 ft. - 899 ft.
Dimorphodontosaurus [illegible] 819 ft.
Stereophanes [illegible] from at 897, just below the [illegible] fundamental layer.

Stereophanes neglecta at 897 ft
Stereophanes [illegible] Pantanes at 892
Stereophanes [illegible] at 887 ft.
Dissorophus [illegible] Trimerorhachis [illegible] at 889 ft.
Stereophanes [illegible] at 887.
Stereophanes neglecta [illegible] 887 ft.
[illegible] 879

Joe Breitenbecher
Oxford, Ohio, to Aug 1.
Trent [illegible] after Aug. 1.

Oxford

Intermalatus? fairly common.
[illegible] dentatum common.
[illegible] dunovii common.
[illegible] unicata common
[illegible] divaricanus, common
[illegible] vetusta rare.
[illegible] canadensis not common.

Strong
Oxford

SW of Oxford, Ohio

Dimerella [illegible]
[illegible]
Helotrella [illegible] 904 ft.
Stropheodonta [illegible]
very abundant at Helotrella
horizon [illegible]
The underlying [illegible]
beds.
Very large Helotrella [illegible]
[illegible] inch [illegible]
Leptaena [illegible]
abundant below Helotrella horizon
about 3-4 ft = 898 ft.
Rhynchotrema [illegible] at 899 ft
Strophomena [illegible] at 899 ft
at 899, just below the [illegible]
[illegible] Leptaena [illegible]

Strophomena neglecta at 897 ft
Strophomena [illegible] rectangular at 892
Strophomena [illegible] typical 889 ft
Dinobolus [illegible] Meesia [illegible] Leptaena
[illegible] at 889 ft.
Rhynchotrema dentatum [illegible] at
889.
Strophomena neglecta [illegible] 887 ft.
[illegible] 879

Joe Breitenbecher
Oxford, Ohio, to Aug 1.
Trent [illegible] after Aug 1.

Lichenocrinus interrelatus? fairly common.
Rhynchotrema dentatum common.
Helotrella richmondensis common.
Stropheodonta [illegible] common
Strophomena [illegible] common
Strophomena vetusta rare.
Strophomena canadensis not common.

3 mi. NW of Court house at Hamilton, N.W. branch of Two mile creek, along logroad from 704 N to 869.
Here Phillipsia scouleri moderately abundant between 727 and 730, the remainder not well exposed.
Dimorphon retrorsum gives good specimen at 760. This is lower than supposed, but by frequent many fossils show a point of [illegible] Numerous shallow syncline along the Hamilton Sun band.

3 mi W of North Hamilton, 1/4 mi West of 860 in Sec 18, the same bedded limestone at the base of the Waynesville beds along Salem Pony is found. A good Dimorphon retrorsum in a loose but unweathered fragment has not been secured so far. According to this the Dimorphon zone should be placed here at about 780 ft.

Acidaspis oweni.

Thorax with 10 segments. The pleurae with two spines, Posterior spine of penultimate segment = 4 mm.
Anterior spine of penultimate segment = scarcely one mm.
Posterior spine of 5th segment = 3 mm.
Middle line of the rhachis near posterior end = 4 mm. Gradual lower 4 mm. near middle length of body, not counting the spine.

Pygidium with 2 spines 6 mm. long, 4th intermediate spines 1 1/3 mm. long, and at least 3 lateral spines of which the innermost are about 1 1/3 mm. long.

Head and spines of pygidium rather roughly granular.

A second pygidium has the intermediate spines scarcely 1/2 mm. long. Slight difference.

High bank road Four Mile Tallawanda Creek. 2 1/2 mi. N of Oxford, west on part of section 11, Found by Dr. Stephen R Williams, in lower part of Waynesville bed.

NW of Riley

Dip north retrograde 22 ft above creek in SE corner of 16. Left bank rises [illegible] is fairly [illegible] in just below. Dolomite [illegible] just above [illegible] below the retrograde limit.

3 mi [illegible] 7 Mile Pk.

Hebert Well is a [illegible] 50 ft below or 20 [illegible] sections 16, 17, 20, 21 [illegible]. One mile west the crest must be near, at least of Waynesville.

[illegible] Dolomite [illegible] on dam bridge in Dry Fork.

10 ft dam [illegible] contains [illegible] in [illegible] section [illegible]

14 ft total. Refrigerator [illegible] layer.

16 ft [illegible] Steeple neglecta.

17 ft Total Steeple, nature typical

18 ft total Steeple and [illegible] abundant [illegible] Steeple [illegible]

20 ft total Steeple neglecta.

20 ft - 22 ft Steeple neglecta [illegible] Steeple nature [illegible]

23. [illegible] Steeple [illegible] Crania [illegible]

26 [illegible] Steeple [illegible] Dolomite [illegible] Steeple both [illegible]

36 ft [illegible] dip [illegible] retrograde [illegible]

X

Hebert Well is a [illegible] 871 ft above sea level in Gray's [illegible]. 3/4 mi W of Millersville, 1/2 mi N along N & S road.

NE of [illegible] 1 mi West of Millersville.

771 ft above sea level: top [illegible] layer of Cincinnatian. The weathering limestones and [illegible] well exposed = 4 ft in [illegible] plenty of [illegible] at top. Thick heavy bedded coarse limestone layer 8 in the [illegible] near Waynesville.

757 ft = Dip retrograde according to calculation.

Dip retrograde 1/2 mi E of school house No 6 in section 27, 3 1/2 mi W of Millersville at about 755

S of school 5 in section 20, 2 1/2 mi NW of [illegible] = Dip retrograde.

Dimmitt's return 2 mi W of Middletown C&D station at first bridge across branch of Falls Run, near West edge of section 17 on pike across middle of section = 735 ft above sea level.

Dimmitt's return
726 ft above sea level
1¼ mi W of C&D depot at Middletown along road going west up a creek.

Dimmitt's return on Brown's run
721 ft above sea level

From Carlisle C&D depot due 2 miles SW and nearly 1 mile N, on line between Montgomery & Butler Counties, top of window ledge at top of Dudleytown is 730 ft above sea level just below the arch bridge. This would place the Dimmitt's return as high as at 716 approximately.

1516
8
1212

Georgia. 1906.

→ Hebertella insculpta. Upper layer. 4 ft.
Leptaena + planumbona 5½ ft.
Dinorthis acorn Ker
Strophomena neglecta with
Strophomena rectona at base } 9 ft.
Interval in dusky gigas layer 12 ft.
→ Hebertella insculpta lower layer 3 ft.
Leptaena + planumbona 5 ft.
Dalmanella iowa very common 5 ft
Orthoceras fletcheri day 5 ft
Dalmanella iowa 3½ ft.
Clay pebble with iowa 5 ft
Clay + clay pebble 3½ ft
Nodular top of Arnheim 7 ft
Strophomena concentrica
Interval 16 ft
Dinorthis retrorsa 1½ ft
Lower limestone 20 ft
Clay 6 ft
Interval 41 ft

Georgia 1908

Dinorthis subquadrata
2 ft interval
4 ft Pl. Hemimbriatus serpens
7 ft interval
4 ft Hebertella insculpta
4½ ft interval.
2/3 ft with Dalmanella iowa and layer
Dinorthis acorn
12 ft interval with Leptaena and
Strophomena rectona and
Strophomena neglecta and
8 ft interval
Wanderlichia layer top.
5 ft interval
1 ft Hebertella insculpta abundant
25 ft interval to Orthoceras fletcheri bed
37 3/4 ft interval to Dalmanella iowa
6 ⅔ ft under top of Arnheim
Strophomena concentrica.
16½ ft interval.
2½ ft Dinorthis retrorsa
3 ft interval.
Dinorthis acorn
3 ft interval
½ ft
1½ ft interval
Platystrophia lynx
6 ft interval.
Little Vermilion River

Oregonia.

131½ Dimerella subgeniculata base
10½ ft interval
121 Hebertella insculpta 4 ft
117 5 ft interval
112 Dimerella emaciata
112 Stropheomena rugosa columns 12
100 13 ft interval
87 Hebertella insculpta limestone,
86 63 ft interval Calymenella fossa
23 Normal bed at base of Arnheim. Top.
23 ft interval
0 Dimerella retrorsa

along RR NW of Bridgeburg
retrorsa, Leptaena and Lynx specimen
at 900 ft = 37 ft above top of
not Anticline with Lynx Crinoid

2. Prairie Township, Clermont Co., 1½ mi. NE of Mt Orient P.O. Roadside of Stonelick Creek. Platystrophia lynx common at 1450'. Dalmanella flexa common also. Form filiformis of P. raveliana, approaching D. dalmani, but too poor to be certain.

3. ½ mi. SE of Clarksville. Lying of Mt Orient shale and underlying beds not present. Base only present.

4. SE of Clarksville. Mt Orient. Base of lynx beds. Lynx shale absent.

7. 3/4 mi. S of Dayton Ills.
Stream N of G. Patrick.
Upper Helenella incapitata
15 ft interval
20 ft interval
Strophomena nigrita
5 ft interval.
2 ft Lower Helenella in shale
7 ft above river level
1485 Upper incapitata
22
1463 Strophomena nigrita
5
1418 Lower incapitata
23
1390 not exposed.

8. Cincinnati Strophomena dip.
Dimerella zone
Pleurotomaria bed
Helenella
Strophomena nigrita
Lower incapitata
Strophomena nigrita
Dimerella
Upper incapitata

9. Half mile west of Cincinnati, immediately S of bridge.
Rattlesnake 5 ft from last rock.
Cincinnatiensis [illegible]
Strophomena nigrita
[illegible]
10 [illegible] + Leptaena just N of 1. [illegible].

Eddies Run 1 mi E of Corydon
Lower pike from Decatur to West Union in Adams Co.

Cincinnatiensis Strophomena. Stand for
18½ ft [illegible]
1/3 ft [illegible]
5 ft [illegible]
1 ft [illegible] Strophomena
10 ft interval
1 ft Lower Helenella incapitata, not in [illegible]

R = 3½ mi NW of Bentonville on dirt road, across Eagle creek N of creek
1630 Upper incapitata layer
16 ft interval
Strophomena neglecta & retusa
3 ft interval, neglecta & retusa
Strophomena nigrita
1600 top of hill [illegible] creek.

S, 3 miles NW of Bentonville
Small ravine S side of Gordon Run, up stream south of Eagle creek.
1805 Strophomena about 5 ft above base,
1690 Catazyga [illegible] over lower incapitata,
1689-1680 Inoceramus fragilis very common.
1670 Cincinnatiensis. Strong dip here.
1645 Eagle creek
1520 Top of hill
1820 Base of section

copied 1914

Amand,

S = Catazyga tediflora.

Upper Incepta bare.

11 ft interval.

Strip, stasta

4 ft interval.

Strip, rejectus abundant

5 ft interval.

Wavy marked layer with Leptaena

2 ft interval.

Lignatus with Leptaena abundant

10 ft interval.

3 ft. limestone with Strip. fl. plumosa

S> abundant.

Fl. d. and rutis + jugosa abundant.

2 ft interval.

Wave marked limest. jugosa, rutis

18½ ft interval.

Road crossing one creek.

Manchester.

Quarry NW of town, north of bridge at junction of Bradyville and Aberdeen pikes.

Top of Strph. Concordensis zone.

47 ft interval.

5 ft with Leptaena rutilia Camarotoechia

27 ft top of Massive limest are regarded as top of Mt Auburn. This gives 79 ft to Auburn.

20 ft Mt Auburn.

71 ft Corryville.

20 ft Bellevue with lyrax abundant: Ralfie layers.

12 massive overbedded top of Fairmount.

Vanceburg.

Shale Point

R

3 ft fine wave marks
interval with fracture layer at top,
top of section.
several fracture layers, one at
8 ft interval, chiefly shaly but several
3 ft fracture layer. Heaviest seen. D
5 ft 5 in. Interval shaly rubble at top.
1 ft 4 in fracture layer. good.
1 ft interval. } C
2 ft 7 in Heavy fracture layer.
10 ft chiefly shale, with some fracture
1 ft 4 in fracture layers. B
10 ft chiefly shale.
gradation
4 3/4 ft 3 layers of fracture, could be A
stone.
8 1/2 ft shale with several layers of fracture
21 1/2 ft chiefly covered. Brownish upper
shale and shales.

62 29 1/2 ft Olive shale top,
More fossils carbonaceous shale
More [illegible] shale
19 ft Black of clay shale
13 1/2 ft To shale and [illegible]
More [illegible]
[illegible] = top of Olive shale
47 ft [illegible]
103 1/2 ft Interval. Light colored, soft clay shale.
Chagrin formation.
60 1/2 ft Jump part of shale down bottom of
creek at bridge on pike.
Fossils Wilcomb's and large
[illegible] about 10. below top of
[illegible]

Vanceburg.

95 ft Ferruginous shale rubble. 697 1/2
42 1/2 ft Ferruginous clay shale rubble 599 1/2
with little fracture.
13 ft fracture and shale 550
18 1/2 ft fracture and shale ← fossils collected
1 ft 3 in fracture ledge. 518
various levels.
37 ft interval. fracture blocks at
16 ft fracture abundant. fossils
heavy with good Tarrinus midway
* 2 1/2 ft. stone.
Nodular stratum of impure limestone
abundant. Tarrinus rather rare.
23 ft Interval with heavy fracture layers
interspersed up to top.
Yellow clay layers at various
44 ft fracture with Tarrinus and
2 ft 1 in fracture layer, solid
5 1/2 ft interval shaly
*4 ft 2/3 ft } fracture ledges. Cando-galli
2 in 1 1/2 ft } common.
1 ft }
8 ft 6 in interval, simple ferruginous shale
1 ft fracture with cando-galli abundant,
ferruginous.
4 1/2 ft shale [illegible] Smaller [illegible]
5 1/2 ft fracture [illegible]

31 1/2 ft [illegible] ferruginous [illegible] top
R. [illegible] shale rubble with

Vanceburg
Shale Point.
Condensed section,

137½ ft Ferruginous arg. shale rubble

85¾ ft Freestone at various levels,
Taonurus only near base + rare,

* 2½ ft. Nodular impure limestone layer

74½ ft Freestone at various intervals
Taonurus not common.

* 4 ft 2 in Taonurus common in freestone 175
* 8 ft 6 in Purple ferruginous shale,
1 ft Taonurus common in freestone

52 ft Internal with 5½ ft freestone at base,

31½ ft shale rubble chiefly

56 ft 6 in freestone at various intervals.

21 ft 6 in chiefly argillaceous shale rubble

273 ft Chief shale measured down to
bed exp below bridge above Jeffers

28 ft 6 in down to top of Waverly.

301 ft 6 in = total depth of shale.

Alum Creek for comparison. See 3rd page following.

223 ft

Ivyan ?

Black Hand ?

*

113 ft.

Cuyahoga ?

38½ ft Internal to top of Taonurus common.

15½ ft Sunbury black shale (15-16 Andrews)

116 ft

21 ft 3 in Berea freestone

42 ft 7 in chiefly rubble = Bedford.

36 ft 6 in chiefly freestone = Bedford.

21½ ft { argillaceous shale rubble with
11 ft white clay at base.

242 ft 3 in Ohio black shale

Maxville limestone

115 ft Logan Central Ohio,
85 ft buff arenaceous shales and thin bedded sandstones.
17 ft quite massive buff sandstones
6 ft argill. shales.

Burlington & Keokuk

90 ft Black Hand.
1 ft Conglomerate II identified by Herrick to Scottville.
6½ ft All arenaceous shale is very fossiliferous and with Spirifer grandis & fossils very fossiliferous to Scottville.
25 ft Massive fine stone.
5 ft Conglomerate I is less fossiliferous than Conglom. II

Kinderhook

200 ft Cuyahoga (275 - 300
40 ft fossiliferous shales
xxx Calcareous concretionary layer fossils
Shales and Sandstones

15 ft Sunbury
30 - 40 Berea SS
85 ft Bedford

Buena Vista.

16 ft chiefly shale, upper part reddish.
5 ft 7½ in. Buena Vista = City Ledge.
Tarrantus abundant.
5 ft 4 in fine clay.
16 ft Sunbury shale.

110 ft
1 ft 9 in Massive Berea SS
Thinner bedded & shaly.
Leaf heavy SS in Bedford.

X

Vanceburg.

Alum Rock.

X 38½ ft { Interval top = freestone full of Tarrinus
Lower 11 ft weathered to white clay, containing phosphatic nodules
15½ ft + S uniform Black shales certain.
2 ft 6 in freestone
3 ft 6 in freestone layer top = ripple marked
4 in freestone.
2 ft 10 in several freestone layers. top layer ripple marked.
1 ft 5 in freestone layer. top = ripple marked
shaly at base.
1 ft 1 in freestone ripple marked at top.
4 ft freestone, several layers,
1 ft 8 in freestone. top = ripple marked,
base = shaly
1 ft freestone, shaly at base
1 ft 5 in freestone layer.
11 in freestone in rather thin layers,
7 in freestone in 2 layers. top of top
layer with ripple marks.

42⅔ ft { 36 ft 9 in { except near top and base
Interval. chiefly shale pebbles, but covered
4 in freestone D
5 ft 8 in arg. shale pebbles

30 ft 5 in. { 1 ft freestone layer C
6 ft chiefly shale pebbles, covered,
1 ft 6 in freestone layer, shaly at base.
2 ft 2 in freestone layer, contains at base B
20 ft
1 ft 7 in shaly.
7 in freestone.
2 ft shaly,
10 in freestone.
1 ft 1 in shaly
1 ft 6 in freestone layer. top wave-marked A

1 ft shaly.
2 ft 3 freestone layers.
7 ft 6 in { fossiferous shale to wood top = 2½ ft
ft 8 in freestone.

21½ ft chiefly shaly, lower part more arenaceous and weathering in lower 5 ft to white clay,
No phosphatic nodules.
Top of Clinton shale certain.

24 ft + 3 ft 5 in RR drain tile level. { Lingula - Michigania and chert
15 ft below top

B2

Vancebing.
Shale Print.

R-
1 ft. Buena Vista City ledge.
5) 21 ft { Including white clay section above
{ Sunbury + Sunbury shale below.
4) 16 ft 3 ft Berea SS,
3 ft layer, with parting near middle.
9 in layer.
6 in thin shaly freestone.
1 ft 3 in layer, ripple marks.
1 in layer fine ripple marks,
5 in layer fine ripple marks.
5 in layer fine ripple marks
9 in layer.
10 in several layers with ripple marks
1 ft layer.
1 ft 4 in layer with ripple marks
7 in thin shaly layers with ripple m.
10 in layer, splitting in two.
8 in layer.
9 in weathering soft and shaly.
1 ft 6 in layer.
Sum of preceding 14 ft 8 in.
Discrepancy due to washing out of clay along edges and dropping of freestone layers.

3) 40½ ft chiefly shaly freestone rubble. Bedford shale simply surface.
37½ ft chiefly shaly freestone rubble
4 in freestone
1 ft 3 in shaly
4 in freestone
5 ft chiefly shaly freestone rubble.

A2 Vancebing Shale Print.

2) Berea SS
3 ft 2 in freestone layer, largest seen.
1 ft 3 in shaly
4 in freestone.
3 ft 11 in shaly.
1 ft 2 in freestone
1 ft shaly
2 ft 7 in freestone, irregular base
2 in freestone irregular base,
1 ft 5 in shaly
9 in freestone.
5 ft 6 in chiefly shaly, covered in part.
9 in freestone.
6 in shaly
1 ft 9 in freestone
1 ft 2 in freestone
8 ft 4 in chiefly shaly
7 in freestone.
1 ft — freestone.
1 ft — covered
9 in freestone.

37 ft 3 in Bedford SS

8 ft 6 in
2 ft 3 in shale
3 in freestone
4 in shale
2 in freestone
1 ft 4 in shale
3 in freestone
3 in shale
4 in freestone
3 in shale
4 in freestone
difference due to slumping

21 ft 6 in Chiefly covered. Bedford = Buena Vista Bedford shale but base.

C 2 Vanuxem Shale Group,

13 ft 3 in

13 ft various fracture layers
fragments collected,
72 ft 9 in fracture at various levels
2½ ft nodular limestone layer.
67 ft fracture at various levels
2 ft 1 in fracture layer
5 ft 6 in interval - chiefly covered

104 ft.

8 in irregular fracture.
9 in Candy-like fracture
7 in clayey thin fracture
1 ft 5 in fracture
4 in clayey
10 in brownish pebbly, fracture
1 ft 8 in light brown argill. shale,
6 ft 6 in prosphatic, fossiliferous shale,
6 in fracture with Candy-like
R 13 ft 9 in Olive colored shale chiefly covered in large parts

Rome Data Well No. 1 X
inclin. 0.5
Vastine creek Rome Tide-water Co

3-3" fracture
4" shaly - Brownish Gray layer
2'-4" fracture
1'-6" subtitel clay with phosphatic nodules, fossils not [illegible] X
15 ft Sunbury black shale

Section 4.

1 ft soft clay shale not exposed
3 ft — fracture
4 in soft clay shale } Brown & Gray layers
1 ft 9 in fracture
23 ft } Gray clay shale
} Sunbury black shale
131 ft interval [illegible]
Olive shale

Portsmouth.

John Wright quarry 2¼ mi. up Carey run.

James Conlin quarry, also a bank, about 3/4 mi. up Stony run.

Portsmouth A'

Bodmer's quarry. 1 mile below Wright's quarry, on Carey run.

clay shale. Top not seen, see Rich Stony

1 ft 5 in freestone
11 in freestone, shaly layers.
5 ft clay shale
6 in freestone
9 in clay shale
1 ft 4 in freestone
3 in clay shale
6 in freestone.
3 ft 6 in clay shale
1 ft 6 in freestone
2 in clay shale
2 ft freestone
1 in clay shale.
1 ft freestone
2 in clay shale
1 ft 6 in freestone
1 ft freestone
2 in clay shale
10 in freestone,
1 ft 2 in freestone
4 in clay shale
3 in shaly freestone
7 in freestone
6 in freestone
6 in freestone
9 in freestone
1 ft 2 in freestone
1 ft 1 in freestone
11 in freestone
5 in freestone
2 in clay shale
10 in freest

17 ft 2 in

Portsmouth A.

Bodmer quarry.

6 in	clay shale	4 ft 3½ in
9 in	freestone	
4 in	clay shale	
1 ft 2 in	freestone.	
1 ft 2 in	clay shale	
4½ in	freestone,	base of section

Portsmouth,

Foot of tramway.
Opposite Frank Krauss.

	3 in	nodular ferruginous layer.
	8 in	freestone.
2 ft	6 in	Clay shale
	8 in	freestone weathering slaty.
1 ft		clay shale.
2 ft	10½ in	freestone.
6 ft		clay shale, with nodules 1 ft above base
1 ft	3 in.	freestone, weathering coarsely nodular and ferruginous. Some part of overlying layer spalling, but not nodular or ferruginous.
315		
298		Blacksmith shop
380		= Sunbury. Some part of exposure in Stony Run.

Portsmouth, 1½ mi West of
= Reitz's quarry in Carey Tum.
2¼ mi up creek from this town

23 ft	clay shale top not seen	
1 ft	freestone	
4 ft 6 in	clay shale	
5 in	freestone	
10 in	shaly freestone	
1 ft	freestone	
2 in	shaly freestone	
6 in	freestone	
3 ft	clay shale	
1 ft 3 in	freestone	
1 in	clay shale	
2 ft 4 in	freestone	
3 in	clay shale	
1 ft 3 in	freestone	
1 ft 4 in	freestone	
11 in	freestone	
1 ft 4 in	freestone	
4 in	clay shale	
5 in	freestone	
5 in	freestone	
9 in	freestone	20 ft 7 in
10 in	freestone	
1 in	clay shale	
1 ft 1 in	freestone	
1 ft 1 in	freestone	
1 ft 3 in	freestone	
6 in	freestone	
1 ft 6 ½ in	freestone	
6 in	clay shale	
1 ft 2 in	freestone	
2½	clay shale	
1 ft 8 in	freestone	

Portsmouth.
Reitz's quarry

1 ft	clay shale	
9 in	freestone	
2 in	clay shale	
9 in	freestone	
1½ in	clay shale	
9½ in	freestone	
9 in	clay shale	23 ft.
1 ft 2 in	freestone	
3 ft	clay shale	
2 ft 6 in	freestone	
1 ft	clay shale	
3 ft	freestone	brandcut a
5 ft	clay shale	given by
3 ft	freestone	quarryman.

Portsmouth,
Stony Run. Amkin quarry.

13 ft clay shale. tip not seen.
4 in freestone
2 in shale.
1 ft 3 in. freestone
3 in clay shale
6 in rock weathering shaly
4 ft clay shale
4½ in freestone.
7 in clay shale
8 in freestone.
2 in clay shale
4 in. freestone
2 ft 10 in clay shale
1 ft 7 in freestone
2 in clay shale
2 ft freestone
2½ clay shale
1 ft 7 in freestone
1 ft 3½ in freestone
1 in clay shale
1 ft 1 in freestone.
1 in clay shale
1 ft 6 in freestone
24 ft 4 in < interval.

9 ft 7 in

Interval from Sunbury to top of Buena Vista = 59 ft 9 in.

4 in weathering coarsely nodular ferruginous freestone
1 ft freestone.
23 ft interval covered.

25 ft 10 in

City ledge.
2 ft 4 in freestone blocks giving rather crumbly nodular
1 ft 9 in freestone weathering out in ferru-
2 ft 6 in freestone.
14 ft clay shale with nodules 2½ ft above base becomes more evenly bedded up stream
3 in nodular ferruginous layer.
5 ft clay shale. Not seen in vertical section
Sunbury black shale.

Peebles Quarry Hill section.

= about 4 miles up the river, from Portsmouth, up gully between 2 hill angles quarried for shale.

21 ft
- 11 ft fire clay and irregular lenticular SS,
- 2 ft 6 in dark arenaceous shale.
- 1 ft black bituminous shale & coal.
- 9 ft interval covered.
- 2 ft fire clay

5 ft 6 in quartz rather fine grained SS <limit of Waverly

42 ft 7 in
- 3 ft 10 in Waverly freestones.
- 13 ft chiefly covered.
- 22 ft { occasionally, Taonurus at top? SS, thin SS, shaly layers, and thin clay shale.
- 3 ft 9 in thinner SS and shaly SS, Taonurus?

12 ft
- 6 ft massive sandstone, rather thick layers
- 6 ft similar massive SS but weathered softer.

49 ft
- 19 ft sandstone and considerable rock weathering shaly.
- 25 ft covered. probably weathering shaly in part as in underlying beds.

120 ft
- 39 ft 6 in. freestone weathering shaly in part, Hydro specialis sponge 6 ft below top.
- 43 ft. freestone section } weathering in part
- 37 ft 6 in freestone section } to shaly stuff
- 11 ft shaly freestone with a few solid freestone courses near top.

42 ft 6 in covered.

- 44 ft brownish more arenaceous shale
- 50 ft this part of shale worked by Peebles, trace of gum tree
- 23 ft 6 in blue shale also generally belts in lower exposure of section in gully

- 22 ft { marked at top, glass sand. strongly cross bedded in ripple white quartz or massive SS.
- 3 ft 6 in interval

In this section all the Waverly rocks are freestones and not coarse enough to be called sandstones.

230	42 ft	Logan freestone.	488+
	176 ft	Black Hand freestone	446+
232	170 ft	Cuyahoga shale.	270+
	?	interval	
	60 ft	Berea Vista freestone	198
	15 ft	Sunbury	138
123	16½ ft	Berea freestone	123
	40 ft	Bedford shale	107
	37 ft	Bedford Sandstone	67
	9 ft	Similar to above	30
	21 ft	Bedford shale.	21

NE of Scottville.
About 2 miles SW of Sheffield.
Base of Sharon conglomerate + SS.
19½ ft interval
NE of tressle 390, conglomerate 2 is found about 2 feet above the creek bed.
interval

NE ¼ mile post 11 from Portsmouth fossils are found in creek bed. A short distance up stream, above tressle 394 the freestone contains a few pebbles, hardly enough to be called a conglomerate

South of tressle 397 shaly freestone appears.

Section in gully below bridge 395,

Block of big cut buff freestone above.
9 ft Massive buff freestone in Logan
2 ft covered.
6 ft Conglomerate No 2 + Sandstone.
16 ft Buff freestone.
2 ft Conglomerate + SS No 1.
14 ft 6 in. Buff freestone
13 ft Mostly covered, some freestone
Water level

South of bridge 398, at Sheldon Station the upper sandy part of the shale series appears to occur.

Limeville. Railway section.
1/4 mi up the hollow from the station, and up the second hollow on the west side for 1/4 mi. then up the railway northward.

At foot of section below B 1000 there are 33 ft additional of fresh stone, and shaly fresh stone, making a total of 274½ ft below the Maxville limestone without exposing the argillaceous shale quarried by the Pebbles Co at the base of their quarries.

{ middle part brecciated.
5½ ft { Maxville limestone arenaceous looking,
18 ft Covered
22 ft Thin shaly fresh stone nubble.
13 ft. { into shaly nubble, rather coarse pieces
{ More massive fresh or weathering
25 ft shaly fresh stone.
2 ft Massive nodular layer of fresh stone.
10 ft Thin fresh stone shale nubble. Covered section.
21 ft Rather massive fresh stones.
{ 21 ft shaly fresh stone.
{ 17½ ft shaly fresh stone a little
Base of railway exposure. Thickness
92 ft interval.
B 1000 - Fresh stone layers 1 ft thick weathering like large nodular shale.

140 ft

Limeville.
A quarter of a mile west road along the top of the Ohio river bluffs, a layer of fire clay overlies unconformably the top of the Maxville limestone, 2 ft going down into it about 5 ft.

Maxville section at this locality

6 ft fire clay, green flint clay.
amount of erosion
{ 2 ft very lowly brecciated, disintegrates irregular surfaces
2 ft Massive. brecciated in part. { integrates easily.
1 ft 6 in { soft rather coarse breccia disintegrates easily.
1 ft 8 in massive coarse grey l. { at base coarse.
1 ft 7 in { massive stratum grey lime, breccia
2 inches irregularly shaly breccia parting,
1 ft compact grey limestone, lower surface uneven.
1 ft + or - stratum of soft coarse breccia
10 ft massive compact limestone with some calcite & brecciated fissures.
21 ft massive grey coarse limestone brecciated in part.
5 ft { very sandy light grey limestone, { Some particles rounded + worn

Grassy Fork of Kinney, 2 mi. from Kinney
R 3½ mi. SE of Vancetown, on E slope of Vancetown hill, on road to Randville, Thomas Pell, Jr.

2 in clay
3 in freestone
2 in clay
1 ft 10 in freestone
4 in freestone
7 in freestone
1 ft 2 in freestone
2 in clay
5 in freestone
7 in freestone
8 in freestone
3 in clay
10 in freestone
9 in freestone
6 in shale
10 in freestone
1 ft 9 in covered probably shale
2 ft freestone
3 in shale
10 in freestone
2 ft 8 in several layers of freestone & clay
2 ft 10 in covered probably shale
6 in freestone
1 ft 6 in shale
2 ft freestone
3 in clay shale
5 in freestone
5 in clay shale
6 in freestone
5 ft 6 in sandy clay shale
9 in freestone
8 ft 3 in clay shale covered except nearly
1 ft freestone
1 ft 9 in covered
5 in clay shale

42

Same Q

3 –
3
3
3
1
6
2
3
3
1 ft freestone
1 in shale
2 ft 1 in freestone, shale, or clay
1 ft 7 in freestone
2 in freestone
1 ft 6 in freestone with shale, parting in mid.
2 in freestone
10 in freestone
6 in shale, freestone
1 ft freestone
3 in freestone
10 in freestone
2 in clay
6 in freestone
1 ft 10 in clay shale
4 in freestone
1 ft 9 in freestone
9 in freestone
1 ft 8 in shale, freestone
6 in freestone
3 ft freestone
1 ft 6 in freestone
4 in shale, freestone
8 in freestone
5 in freestone
R 1 in clay
R 6 in freestone

All freestone

25

T

7 in freestone
7 in shaly freestone
7 in freestone
1 in clay
9 in freestone
1 ft 7 in freestone
1 ft 3 in freestone
6 in shaly freestone
7 in freestone
1 ft freestone
7 in freestone
7 in freestone
1 ft shale
1 ft. freestone
2 ft 4 in freestone weathering to several courses
4 ft 3 in freestone
2 ft 3 in freestone
6 in freestone
1 ft 8 in shale + thin freestones
8 in freestone
2 in clay shale
8 in freestone
2 in shaly
10 in freestone
3 in shale
5 in freestone
3 in clay shale
7 in freestone
6 in clay shale
4½ in freestone
1 in shale
7 in freestone
5 in shaly
2 in freestone

27 ft 9 in

S

V

1 ft freestone
9 in freestone
2 ft 6 in freestone
3 in clay
7
7
8
4
} all freestone
2 ft 1 in freestone
8 in freestone
1 ft freestone
1 ft 9 in freestone
1 ft 5 in = 3 freestone layers
1 ft 2 in freestone
2 ft 8 in clay shale
6 in freestone
1 ft freestone
5 ft clay shale
1 ft 6 in clay + freestone layers
4 in freestone
5 in freestone
1 ft 9 in freestone
2 in shaly
3½ freestone
2 in shaly
6 in freestone
4 in shaly
6 in freestone
5 ft covered
5 in freestone
10 in shale
1 ft 7 in freestone
T 10 in shaly freestone

37 ft 6 in

Q 13 ft black finely smutty shale
9 in fractures lower.
1 ft 3 in flinty shale, clayey.
Berea Top. Thin bedded fractures
strongly ripple marked, in-
terbedded with clayey shale
of flinty color. Not a solid
fracture as clayey shale's seen

Top of section

	14 ft	chiefly shaly, fractures
2nd	6 ft	chiefly shaly with a little coal in top, several fractures layers
	6 ft 6 in	shaly below several fract. layers near top
	5 ft 6 in	shaly below
	8 in	fractures
	2 ft	several fractures layers
	10 in	fractures
22 ft 3 in	3 ft	chiefly shale
	4 in	fractures
	1 in	fractures
	3 in	fractures
	2 ft	fractures & shale,
	1 ft 6 in	fractures
	7 ft 6 in	chiefly covered, but some fractures
U	3 ft 6 in	chiefly shaly with a little fractures

36
100
19 100
37 100 1/2
89
57 100 1/2
226 100
63
139 12)689
42
25 57 5 in
27 9
22 3
117 ft 8 in = a conductive section merging the smutty shale.

98
99
38
93 1/2
85
93
21 1/2
100
360
12)6884
57 4 in
82
139

18 3

X

Ohio shale exposed at Harrison Chapel, near J B Harrison's store, 6 miles above mouth of Laurel, at mouth of Caney Fork.

Sunbury shale exposed south of Harrison Chapel ¼ mile, on road to mouth of Laurel.

¼ mile further on the same road, the Sunbury shale underlaid by Berea sandstone with ripple marks, overlying the Ohio shale.

The Sunbury shale underlaid by the typical Berea sandstone, and overlaid by 3 feet Brenaugh in City ledge and a considerable section of fossiferous clay as at Buena Vista, is exposed at the Pine Hill School, about 2 miles from the mouth of the Laurel, coming from Harrison Chapel.

Beyond Cofferstone at Dixon bridge the Bedford SS is exposed.

At Mrs. W. H. Blackburn's house, about ½ mile east of the bridge the Sunbury is exposed.

About 200 yds up Laurel from road crossing, near mouth of Laurel = Sunbury shale

The City ledge in the underlying Sunbury shale is exposed half way between Ringless and the Tannery, or 2 miles below Ringless on Trace fork of Kimmicomico creek.

Along R.R. SE of Ringless the Conglomerate shales are well exposed, at near Big Cut the Beach Hand SS? come in.

On county line at Big Cut.
Top of exposure.

16 ft 6 in thin bedded to thick white gray cross SS, rapid dip & cross bedded, just off the bottom.

5 ft 6 in Massive cross grained SS with irregular hundet nodules of iron.

Drown at top of Mauxville limestone

42 ft. Massive light gray fossiliferous limestone exposed along road extending at right angles to cut. Collected fossils at top of section = upper 10 ft.

Top of cut.

28 ft. Massive cross bedded, apparently with mud and shaly fossiferous with Sunbury and Berea and at top Crinoidal Burlingtonites

8 ft 10 in red argillaceous shale.

Bridge 38 ft above head.

29 ft 6 in thin bed, fine grained

blue ss, alternating with shales.

Maxville limestone quarry 1/4 mi. West of Carter City.

Top of exposed limestone.

20 ft. crystalline, fossiliferous, two sides.

5 ft 3 in. Interval, mostly weathered to clay.

1 ft 9 in. Two layers gray l.

31 ft 6 in. Massive gray l. some layers with small rounded quartz grains in abundance.

29 ft 3 in. Massive gray l. some of it was bedded.

Purple clay, at top of Waverly.

225 ft Waverly

Level of stream in valley

Smokey shale at S. H. Harrison's in gully N of house, about 1 1/4 mile north of Strickletts.

Fault between Ohio black slate and shaly sandstone at C. H. Thomas, 1/2 mi N of Strickletts along the road down Kinnicinick Creek.

Ohio shale at bridge at Strickletts.

Ohio shale about 300 yds north of James Hollan, on west side of road, about 2 miles south of Strickletts and 2 1/2 miles north of Crum.

About 1/4 mi up Elk Lick, at a tenant house owned by J. E. Kegley, Ohio shale, 15 ft thick at least, is exposed. The mouth of this Lick is 2 1/4 miles S of Strickletts.

At mouth of Elk Lick, 2 1/2 mi South Strickletts, on hill angle SW of road junction.

Smokey shale fragments.

75 ft Bannerdale { Berea tip, in fifth member, about 7 1/2 ft covered.

30 ft Ohio shale. Black fissile carbonaceous.

Road level.

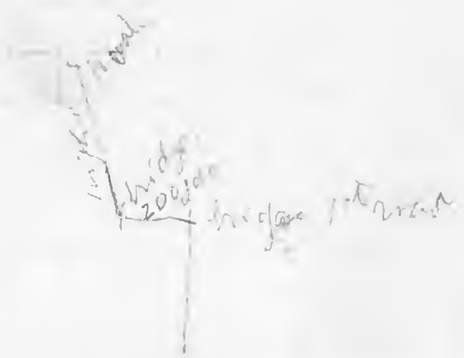
Olive shale at Brown Chapel, about 1 mi. N. of Crum's Store.

Olive shale common as far as Crum's.

Olive shale common as far as Petersville.

NW of Petersville, north of the school, in a gully, and thence up the eastern side of the gully the following section is shown.

Massive sandstones.
37 ft Chiefly covered.
13 ft Smutty shale exposed. Total thickness unknown.
1 in. sandstone layer.
Berea and Bedford sandstones not exposed in a recognizable form.
49 ft 6 in. Not over chiefly shaly fresh. Olive black slate.



Section of 2nd gulley West of Petersville school houses emptying into the West branch of Kinnicinick creek.

One exceedingly massive stratum of fine grained sandstone.
Four or five massive strata of fine grained ss.
41 ft 6 in covered.
12 ft 6 in Black fissile Smutty shale.
14 ft Covered. Some arenaceous or calcareous shales.
17 ft 6 in Bluish to buff more arenaceous shale.
7 ft Bluish argillaceous to arenaceous shale with occasional calcareous + arenaceous partings.
5 in. Thin stratum of sandstone.
4 ft 3 in. Blue argillaceous shale with a little black carbonaceous at base.
2 ft 6 in covered.
9 in Soft argillaceous shale mixed with some black.
Top of Olive shale.
85 ft Olive shale.
10 ft covered.
Creek level.

A third of a mile North of Petersville, a road turns off westward up a small creek, and 300 yds westward forks, one branch going up a steep hill, northward, & branch by way up the hill, the Sunbury shale is 15 feet thick, and is underlaid slightly sandstone, and about 5 feet below the Sunbury, a 2 inch stratum is distinctly ripple marked, positively indicating the shallow nature of the Berea sandstone.

½ mile West of Noah, road turns off towards left, and goes down steep hill. Here Massive sandstone is exposed at top of hill = 55 ft. An incut cut of 45 ft intervenes between this & and top of Sunbury. Sunbury = 14 ft 6 in. Black shale. Brownish shaly sandstone with a few ripple marks, at least 8 ft. Interval unknown.
Cotys Black shale 2 ft well exposed.
Top of Black shale about 110 feet above pike, probably level as near by to outcrop as [illegible]

At Glenn Springs the Silurian limestone here has a crust of light smoky brown color and is 13 ft 6 in. thick, with Black Shale below and Argillaceous shale below.

A mile & one half from Glenn Springs and 1½ mi south of Royal Spring from base of Olive shale to base of Sunbury shale, = about 156½ ft, 3 ft 8 in below base of Sunbury, in Berea equivalent, a 3 in layer of sandstone is distinctly ripple marked. Below this is 10 ft of thin shaly sandstone and the same underlaid occurs above the ripple marked layer. The Berea has lost its characteristic appearance except for the one ripple marked layer.

base 5 ft Sunbury shale exposed.
5 ft covered.
16 ft whitish shaly sandstone at top.
1 ft layer of brown sand.
10 ft chiefly covered shaly shale and several brown layers
44 ft principally continuous series of heavy brown layers.
22½ ft chiefly covered. chiefly shaly shale & thin brown sand.
1 ft shaly brown sandstone
20 ft covered. No evidence of heavy brown layers
1 ft 3 in heavy brown layer
Top of hill

About a mile south of Nashtown a road turns off eastward, and about half a mile eastward from the junction the Ohio shale rests on the Crab Orchard shale, without the presence of any intermediate Silurian limestone. Thin magnesian limestone fragments are common in the upper part of the Crab Orchard clay.

Northeast of Nashtown ½ mi. The Ohio shale rests on Silurian, from 3–15 in. in thickness, underlaid by clay = Crab Orchard.

On Sandy Ridge between Excelsior Springs & Nashtown, the Sandy Hook fossil shale is 15 ft. feet thick, and over this is similar shale, 1 ft, but purplish.

Practically no Silurian limestone between Excelsior Springs and Bentonville, above the Crab Orchard clay, except at Excelsior, mentioned at Nashtown.

Collected West Union Cliff fossils at the Spring on the Everbay farm, 1½ miles S of Glen Springs, on Big Salt Lick Creek near Hooker

Thickness of West Union Cliff 31 feet 300 yards South of Asa Carrington's house 1 mi. South of Glen Springs. Some wat

The West Union Cliff is exposed along the entire Salt Lick Valley from the front of the ridge immediately South of Excelsior Springs to within 3 miles of Vanceburg. A short distance south of Valley the West Union Cliff is so far above creek level that it is probable that some of the limestone elements in the lower part of the Crab Orchard shales are present.

City Ledge on Little Sandy creek, 1½ miles south of Garrison, ¼ mi from Strader's store, on Charley Ruckeel's farm.

along Lincoln Creek at Maysville, 4 large exposures of Platyostroma lyoni, the largest 1½ feet wide, exact, but found 275 feet south of house of Walter Sherwood property of Tom Coffman, and a little further north of house of Mr. C F Reed Reed.

Dell RR cut 3/4 mi N of Summit 4 miles S of Maysville.

Not exposed here.
2 ft Stirpharmia concordamia
12 ft Lime
Dermatis rhopa lyon
4 ft Lime interval
Platyostroma lyon lyon.
1 ft interval
1 ft 6 in. Dejkamia rhomboidea
4 ft interval
Platyostroma lyon.
5 ft interval
here exposed fossil for one [illegible]

at Clarksburg chapel, Dunkirk Union Cliff = Halysites catenulatus, common, a Spirifer like Niagaraensis but no radiating striae seen, some curves, and smaller, also Atrypa reticularis Niagaran form, rather narrow anteriorly, and rather small, also a form resembling vitruvian ascens, also a Camarotoechia like litel in dimensions with about 4 plications on fold. Resembles the expressions SE of Tescalapsa Springs. This exposure is 3½ miles S of Vanceburg on Valley road.

up gently [illegible] clay [illegible] and
crosses at Valley & then up [illegible] along 3rd
{5 ft Smashing shale fragments common
{5 ft covered.
3 ft freestone, massive.
7 in freestone,
3 in freestone, ripple marked.
9 in freestone,
9 in weathering to shaly freestone
1 ft 2 in freestone,

81 ft covered. Initially fairly accurate only,
{2.2.3 Ohio shale certain
{22½ ft covered, fragments of Ohio shale since
ground is covered in shale fragments.
48½ ft [illegible] Brown. and fragments of
overlying shale. See below.
Trace of measured section.

{11½ ft rather massive layers
{6½ ft thin limest. layers covered
{22 ft shaly limestone at base, rest
{8½ ft massive limest. layers

West Union cliffs will be found 4 miles west of Valley, at Harper Hill, & Fossils in the section of West Union measured on former trips W C Morse found Calymene niagarensis and Whitfieldella sublevis found also Leptaena rhomboidalis

NE of stone at Rutledge

{4 in limestone
{6 in clay
{9 in limestone
{3 in clay
{8 in limest. in several layers.
4 ft clay
Clinton Top.

Immediately S of bridge across Indian Run branch of Cattle Creek ½ mile SW of Poplar Flats, on road to Prestonburg.
1 ft 3 in Clinton base. Covered.
1 ft 3 in Belfast, clay with a few thin white layers
6 ft additional Salina clay, partly purple.
Covered.

The limestone layers in the Belfast bed are similar to the Douglas limestones. Some these limestone layers contain Atrypella sinuata, near incidental effect of [illegible] median depression near base.

Direct NW of Poplar Flats

{7 limest. 1 ft limestone
{1½ limest. 4 in clay
{3 limest. 6 in limest.
+ 2 ft 3 in clay 1 in limest.
6 in limestone. 1 in clay.
1 ft clay with 2 lower layers
2 in limestone,
3 in clay
1 in limestone
2 in clay
4 in [illegible]
6 in [illegible] & clay layers
1 ft 3 in [illegible] clay, [illegible] limestone
upper 3 in [illegible]

See last page.

8 in clay and limestone.
2 in l. with thin hyporemo common.
8 in clay with thin l. in middle.
2 in limest.
5 in clay.
1 in limestone.
1 ft clay.
3 in several l. layers & clay.
3 in clay
7 in thin limest. in layers.
2 in clay
* 1 ft 2 in limestone.

5 1/2 ft clay with 2 or 3 thin l. layers

3 in more weathered limest.
Base of exposure near creek level.

Tailing west, about 1/2 mile west of Poplar Flats

Top of ridge.
53 ft Pottsville fast Union.
151 1/2 ft Cat Creek.
Top of Pottsville full of gouges within marking as at Hardy 1/2 mi east of Ribault

---

BC Conglomerate at Oliver

Dayton limestone is exposed about 3 miles SW of Martins. Photographed.

NW of Martins.
6 ft heavy bedded limestone.
6 ft argillaceous & thinbedded l.
54 ft massive l. Most of it unfossiliferous, red dish, and sandy looking, but fossils occur in lower 12 feet.

Top of Ridge 1/2 mi S of Carrs Station

Blue shale.
38 ft 6 in covered.
14 ft 6 in clayey limestone. Fossils.
5 ft covered but probably similar.
7 ft 6 in hard clayey limestone weathering.
20 ft clay shale, under shaly clayey limestone. Top 4 ft of base ordinary West Union limestone.
34 ft

Belfast bed, photed. at Walter Groves' house. The name has changed since prog work. Several layers of one.
Clinton massive bed at base.
Belfast 3 ft 9 in
Schuder 7 ft 6 in

2 mi. S of West Union on Beaty Fork Road to Mrs Hunter

Section in quarry in southern edge of West Union, on Beasley Fork road.

1915

Top of section

2 ft soil.

(2 ft Massive brownish gravel.

2 ft " blue shale, splitting into 2 layers.

1 ft 4 in. massive brownish shale, shattered.

6 in. blue shale, splitting up into 2 more layers.

1 ft 9 in. massive gray gravel, central part stratified, and above this a thick medium layer.

4 ft 6 in. massive white gravel with occasional pebbles, upper surface very irregular.

2 ft 10 in. massive white gravel.

3 ft Same as above, but with thick wavy layers.

1 ft 8 in. massive brownish gravel, worn smooth at top. Piece of spirifer found at this place.

Brown argillaceous fossiferous shales almost directly beneath.

at Bentonville, the Clinton forms the summit of the ridge.

About half way between Bentonville and West Union there is a small beach which formerly carried the upper shaly part of the West Union cliff.

Sec. 1. Four miles east of Flemingsburg, S. of Walling ford road. Black shale hill on property of Charles Blanchet.

1 ft Black slate, probably Sunbury.

25 ft shale and slate, probably Berea and Bedford.

113 ft Olive shale.

46 ft red clay, apparently in upper part of Oxford. At least no limestone fragments visible in the clay, and hence not supposed to be West Union.

27 ft red clay with fossiferous fragments of limestone common.

18 ft red clay with thin limestone fragments such as are common in upper part of Crab Orchard.

36 ft clay shale undoubtedly above of Crab Orchard age.

Level of pike in front of house of John Parker.

That the age of Crab Orchard could be determined only since Clinton exposed eastward.

2) R On road from Walbingford to Fox Spring,
13 ft Argillaceous shale Cincinnatian?
32 ft 6 in Top of Brownstone Freestone thick,
9 in clay shale, marking almost entire section
11 in freestone
shale, thinly laminated.
23 ft 9 in Covered, Chiefly argillaceous, Taonurus common
17 ft Sunbury shale,
18½ ft, Bedford Berea = shaly sandstones
14 ft Covered, Probably chiefly Bedford,
172 ft Black shale exposed
16½ ft of dark brown shale with about 20 layers of greenish clay = Clevelandy?
moderate clay shale
11 ft argillaceous shale.
R. Devonian moderate clay layer,

3) ½ mi. N of R Y McKee, the West Union, richly fossiliferous and easy to collect, is 9½ ft thick,

Golden Seal or Yellow Root and Ginseng, at home of R Y McKee's home, 4 mi N of Miners Mills.

4) At George Hammond's house, 1 mi S of R Y McKee, the West Union, fossiliferous, is

At George Hammond,
Black Shale shale? Clevelandy?
limestone, massive,
4 ft Cavernous, richly fossiliferous
1 ft 9 in massive sandy fine grained limestone.
2 ft 6 in Lower third clay shale,
top uneven, showing
moderate amount of pyrite.

5) Two and one half miles N of Miners Mills, the West Union is 9½ ft thick and consists of lower massive layers and upper shaly ones, fossils appearing throughout some.
just north of home of Frank Marshallo.

A short distance south of house, the West Union, all massive limestone, richly fossiliferous, is 8 ft thick.

At mouth of Anderson's Branch, West Union is exposed.

6 John B Lawver 1 mi N of Miners Mills, Chiefly shale
2 ft shale and a little greenish clay shale layers
from the fossiliferous nearly black
5½ ft chiefly light greenish clay, with 3 or 4 ft West Union l. have not exposed,
Mr Fieldalla in West Union.

West Union extends down as far S as Nunes Mills.

7. A mile east of Plummers Landing on road running the ridge between Stoughton & Indian creeks.

clay shale, 8 in fresh rock

Trace

[illegible] varying level near

57 ft chiefly clay shale, with trace

57½ ft to top of Buena Vista formation.

14½ ft Sandy shale.

3 ft greenish argillaceous shale with calcareous & arenaceous partings

39½ ft covered

160 ft Chiefly shale barometric.

9 ft Alentown

3 ft Oak Orchard

There is no West Union here. The section here begins at home of Basil Hinton.

~~[illegible]~~

RR cut south of Tunnel Cut, Innerkeep Middle Edar.

4 ft Massive hard blue l. layers, [illegible]

2 ft 3 in Massive l. [illegible]

3 ft 4 in [illegible] clay [illegible]

14 ft 2 in [illegible] blue [illegible]

6 ft 6 in [illegible] clay [illegible]

40 ft [illegible] limest. & plenty of clay [illegible] Inner Edar [illegible]

Same ledge well shown in next cut northward, with in place of beds bent on a large scale.

Drawing = 40 ft

One photo taken here but not of bend.

Farther on is lifted out showing similar features.

The next 2 cuts show chiefly the upper crossbedded middle Edar layers.

Turned out 2 photos.

Pleasant Valley, junction of L & N depot.

5 in. black fossiliferous l.

1½ in clay parting

5 in black fossiliferous l.

14 ft argillaceous shale

3 in blue l.

11 ft 8½ in soft blue argillaceous, Utica proper

1 ft 3 in massive wavy mottled l. at top of Cincinnatian

Photo Dave looks immediately N of L & N depot.

South Branch Mfs.

At house of Levi Tracy, Prasopora simulatrix is abundant, associated with Dalmanella, Rhynchotrema, etc. Bryozoans are also abundant.

Section immediately S. of Russell Mill = Old site of Knights Mill.

36 ft — hard, coarse, at base, with Rhy. [illegible] & Dalmanella, especially in lower 12 feet.

18 ft — Prasopora abundant, commonly Dalmanella, intermediate from hard [illegible] simulatrix and Rhynchotrema. 22 to 35. At 35 Prasopora.

35 ft — laminated mass with Dalmanella, from Bed of creek = South Branch.

The fine grained limestones up the pike down through Bridgeport, contain many Strophomenoids belonging immediately above the fossiliferous section.

Rare Williamsonia quarry, on the Devil's Hollow pike, about 1 mi. west of Frankfort.

{ Consolidated limestones, 4 ft, stratified, possibly Nicholas member, but only
7½ Greendale member, lithologically, and formerly like this member,
5 ft massive limestone, assumed to be top of Paris bed.

Does this prove that the Greendale member thins out westward?

At the mouth of Devil's Hollow, opposite Frankfort, west of the river, 1 ft. [illegible] clay (2 specimens) was found.

At Haymond is located the Interstate Fire Brick Co's Enterprise Works. A fairly large plant with the usual entrance a considerable distance up hill. The Maysville limestone shows up a little above R.R. level.

Dalton's pandemonium (= lynx) noted by Cowan and Hammond in Researches among the Antiquities and Conformations Rocks of Central Kentucky, 1847. p. 12.

This fossil is said to be one common 7 miles N of Barren town, on the Greensville turnpike, where the lime bluestone is seen again in descending to the bridge.
12 miles N of Bowling Green the fault of limestone is seen. = 170 feet.

---

40 ft. Flamagan
40 Paris
170 Wilmore
20 Lorgana
40

Cerquent in Co.
12 ft. Rockwell SPR
Chesapeake
Dec.

C. H. Bonyer.

860 Tom Slade spring.
920-910 Large Dalmanites abundant
880 Large Dalmanites abundant
900 Dalmanites + Podamites
925 Dalmanites + Helopella
960 Land of Zac Mann.
990 Mehrenberger 160 ft deep 830.
950 Helopella + Rhynchotrema common.

Immediately east of house,
Calyptoraphus multicostatus common.
8 ft interval
2½ ft { Dalmanites succeeds. Strophomena
Atrypa, Lingula, Rhynchotrema inequivalvis
9 ft interval.
Among of Dalmanites on stream.

At northern boundary, at Dinsmore's well, slaty dark fossiliferous, the strata being 16 feet higher. =
Dip 16 ft south.
62 ft from road to well at Bonyer house.

---

146 { 42 ft Land of Lucas at Bonyer house
Dinsmore's well NW of John Simpson
44 ft interval.
{ Brachyopora fen. Dalmanites rugatus
{ plant, 100 yds in front of John Simpson
60 ft interval
Tom Slade spring.
15 well east of house Bonyer,
and SW of house

Paragon. – Phillips, J. M. Boarder.

From Minehead go thru first tunnel and walk to Paragon.

First tunnel is 3-4 mi S of Dry Creek.

Road from Minehead is good only as far as Soldier.

At Lantana is Sandstone quarried for glass sand.

At end of line from Lantana are limestone quarries.

Immediately N of Sam Howard's home, on North Fork of Triplett creek, 2 miles northeast of Rockville.

Smokey shale,
27½ ft interval, sandy shales,
Clair shale,

About 2½ miles from Rockville, the interval from the Clair to the Bedford is about 24 feet. at home of Noah Hall.

At Haldeman, 1 mi W of Soldier, the mine tres reports fire clay 20 ft above the Maxville limestone. The latter is reported not over 4 ft thick. The Louisville and Portsmouth Fire Brick Co is located here. They mine the fire clay. The Trigonia beds are well exposed beneath the Maxville level. It consists of sandstone interbedded with clay.

Tygart station at Lantana's P.O.

33 ft	N of Pottles plant. Portsmouth, O, glass sand, Coal Measures, etc
15 ft	covered,
7 ft	Maxville limestone boulders.
17 ft	covered.
28 ft	Maxville limestone.
5 ft	covered
	Springal mp. fault
84 ft.	

Same locality as last,

Base of Sandstone = Glass Sand,
20 ft Boulder limestone above the boulder limestone of the Lawton Sand and Supply limestone quarry,
46 ft Limestone exposed in quarry
Top of Lyon
84 ft Lyon
16 ft Black Hand, exposed.

---

4 ft 3 in slate colored clay or fine clay, with a few hard and small nodules the size of wheat grains. A purplish colored band just above the middle,
14 ft Massive strata of light slate or dove colored, somewhat crystalline l. with a few fossils
9 in ± bluish clay interbedded with limestone like that above,
6 ft 3 in Massive stratum of light gray fine grained l. or lithographic stone, weathers to yellow, in some places arenaceous.
1 ft 6 in Massive somewhat crystalline l.
R See 2nd page following

Lonkeiler Point Cut: on Morehead and North Fork RR 6 mi SE of Paragon
Shawnee Sandstone.
5½ ft covered.
37 ft 6 in Whitish limestone, fossiliferous
7 ft White
2 ft brownish clayey material.
3 ft 6 in greenish fine clay, band, purple near middle.
13 ft 6 in Massive whitish l.
1 ft Thin limest + clay layers interbedded.
7 ft 3 in Yellowish very fine grained limestone. Pyr fossils at base

---

Same section as above.
153 ft Shawnee conglomerate. Massive quartzose ss + congl. with white quartz pebbles irregular, coarsely forming cliff along stream.
5½ ft covered
2.1 ft most exposed, massive to medium bedded dark gray coarse grained & crystalline l. fossiliferous. Very fossiliferous 4-5 ft below top.
18 ft Covered, except for loose block of limestone.
4 ft 6 in Coarse grained to crystalline dark gray limestone
Top of cut
T { 3 ft 6 in Massive gray l.
4 ft Massive stratum of bluish gray, somewhat crystalline limestone.
2 ft yellowish clay with rock fragments partially due to d[illegible]

R

2 ft 6 in, mine arenaceous
blue shale, some l. lentils
4 ft 3 in blue argill. sh.
breaking up into nodules
or pieces, containing
l. lentils.
5 in. blue crystall. fossily.
bmo l. stratum. not
constant.
4 in. Blue arenaceous sh.
8 ft 6 in Bluish grey fine-
grained so.

Base of exposure at
Dinsmoor Point Lt.

---

at T { 3 ft 3 in Massive grey l.
1 ft 3 in Black chert l.
3 ft Massive blue-
blue grey somewhat
crystalline l.

The black chert beneath
is brecciated.

Ky Blue Stone Quarry at
Rockville Sta. Freestone P.O.

Sill.

AB 10 in blue fine grained so
3 ft 6 in soft blue argill. sh. with
some thin partings.
5 in blue fine grained so.
5 ft 6 in soft blue argill. sh.
CD 1 ft the f g so.
2 ft 2 in soft blue arg. sh. with
ferruginous nodular
strata at top
6 in, blue f g. so.
1 ft 9 in soft blue arg. sh.
4 in fi grained blue so.
2 ft 2 in soft blue arg. sh.
with ferruginous nodules

Top of quarry at one = top of
Buena Vista
5 in. stratum
2 in parting
10 ½ in stratum
1 ½ in parting
1 ft stratum
2 in arenaceous parting
9 in stratum
1 ft 1 in blue arg. shale
1 ft 4 in stratum
½ in parting
9 in stratum
1 ½ in parting
1 ft 8 in stratum with numerous cracks.

R

Next page.

R.

9 inches parting with
2 in layer of ss at top
and at bottom. Top
one ferruginous

1 ft 5 ½ in stratum.
4 ½ in parting.
* 7 ½ in stratum top covered with Tarrantus
Candidulus.
4 ½ in parting
1 ft 9 in stratum
4 ½ in medium stratum
of ss. which weathers to shale.
4 ½ in parting.
5 in stratum
3 in parting
1 ft 4 in stratum
3 in parting
2 ft stratum
base of quarry.

Between the 3 or 4 thin strata of ss. with considerable shelly partings, according to geology letter,

The strata are all fine gr. blue ss. with numerous Tarrantus markings.
Partings are blue argillaceous shales.

Section of hill along the Highway running N from PO at Forest Grove Rockville Station.

Top of Flats & Wimpenplain
15 ft soil up hill way. Contains quartz pebbles
33 ft soft blue argillaceous shale with an occasional ferruginous parting
2 ft covered
AB 11 in blue f.g. ss. See last section = AB
9 ft 2 in soft blue argill. sh. with an occasional ss parting.
CD 1 ft blue f.g. ss. same as CD.
4 ft 9 in soft blue arg. sh. with 3 or 4 arenaceous partings + 2 sandy ferrug. partings at top.
4 ft 6 in covered. probably sh.
— Probable top of OB member
2 ft 3 in. partly covered. Some shale and f.g. blue thin bedded ss.
12 ft 6 in medium to massive bedded f.g. blue ss. with sh. partings. Tarrantus abundant

5

S

2 ft Stratum of massive f.s. blue argillaceous f.s. same as lowest in quarry of last section.

4 ft 6 in. Interval of 1 or 2 strata of f.s. blue, so. Tannuus there.

1 ft ± ferruginous, brownish so. Tannuus there.

2 in shaly parting.

1 ft 1 in thick blue f.s. so. Tannuus abundant.

4 ft 6 in soft blue arg. sh. with 3 or 4 shaly so. partings. The one near the top = ferruginous Tannuus here.

7 ft soft blue argill. sh. Contact of Conglomerate and Sunbury.

16 ft 3 in Black fissile carb. shale = Sunbury.

18 ft 6 in Berea Bedford formation. Soft blue argillaceous & finely arenaceous shales and shaly or shelly f.s. so. All elegantly ripple marked. Lower 2 ft contains 1 or 2 layers of black fissile shale.

2 ft Black fissile carb. shale, labile.

18 ft 9 in covered. Some black shale weathering gently. ~~C. & O.~~ C & O RR track level

3 ft covered. Road level.

Section of C+O RR cut, photographed, at the Big Blue Stone Co's switch.

Top of exposure but not of formation.

11 ft 6 in. Sandy. Black fissile carb. sh.

21 ft. Blue arg. & micaceous shales & Bedford & Berea horizon, with shelly & shaly ss partings apparently ripple marked.

Base of exposure at level of track.

Section along side of the Eastern Ky Freestone Co's Incline.

Top of Buena Vista.

25 ft. Barnesville. Thick to massive ft. blue ss, with blue arg. sh. partings as in Big Blue stone Co's quarry. No continuous section.

1 ft. Soft blue argill. sh.

15 ft 6 in. Black fissile carb. shale & sandy.

25 ft. Bedford Berea horizon. Argillaceous & arenaceous sh. with shelly ss. partings. Some of the partings shifted by ripples & perhaps gizzards.

32 ft. Chiefly shale. Black fissile carb.

C+O RR. Track.

Limestone Mining Co.
3 mi. West of Olive Hill.

R > 4 ft shaly with partings of irregular.

1 ft 3 in, Shales & thin marl. finely brec-
ciated, fossiliferous.

H 5 ft Thin to medium bedded compact
blue gray l.

G 7 ft 8 in very massive and white crystalline l.

F 4 ft 6 in, Massive and more even bedded l, very
b.g and gray blue color weathers yellow

D, 8 ft 3 in, Three to four inch limestones, breccia-
ting nodules, especially in lower
part with clay partings thicker in lower part
Irregular in size. Clay = No 2 fine clay.
Breccia in the clays looks similar
this forms brecciated part. This
Breccia occurs up to 5 in above

C 3 ft 5 in clay, dark green below, purplish
red with breccia more minutum 2 in.

3 in Brecciated top of Prime Character
as underlying limestones.

E 6 ft 3 in very dense green brown limestone,
upper layer pressure brecciated,
fossiled layer above the gritty,
This limestone runs as a handy

2 ft 6 in very white & dense l, like Bryant l.
1-2 in clay parting.

B 6 ft 2 in White, or gray, smooth grained l,
Base is clayey l, irregular contact
like that at base of Limestone Pond

A 8 ft Bluish massive very fine grained l,
Base of quarry but not top of Prime
stone

Analyses by Norton Iron Works
of the cutting ledges. Only
ledges 1 & 2
used for flux
others contain
too much Si

	Silica
H = No 1.	1.80
G = No 2	.60
D+F = No 3	11.75
E = No 4	4.70
B No 5	3.90
A = No 6	8.15

Top of exposure

R 4 ft 6 in Medium massive bedded l
compact. Chert nodules.

Below A there is at least 5 ft
of limestone. More footwalling
the amount should be 9 ft
instead of 5 ft.

D contains { Bedeceras [illegible] and Lorenis
Productus centralis
Leptaena sulcata

Section of Lawton Sand Supply Co
Limestone Quarry, just below the
Glass sand quarry.

Present top of quarry.

3 ft soil.

5 ft massive grey compact l. with
residual clay above & below

F 2 ft 6 in massive grey fine grained l.

D 5 ft 9 in thin bedded [illegible] l. alternating with blue clay seams

C 6 in Fire clay & dark coarse angular l. pieces
[illegible]

7 ft 9 in Top brecciated & [illegible] massive l.
grey fg. compact l. with fine [illegible]
Base is lively & crazily brecciated in places.

5 ft Massive flint grey l & or lithographic l.

15 ft 3 in Thin bedded fg. grey l.

4 ft 3 in. Thin bedded blue lim-
pure limestone (brittle and
about 20% lime)

Base of quarry. Said to be
within 1 ft of Trojan fresh water

The fire clay is a mining bed.

Loc 3. Over road [illegible] in road north of the bridge on road by Bowman & Wearing Co.

[illegible] Northern Area.

17 ft 9 in Covered
9 ft Shaly exposed
19 ft [illegible]
[illegible] well exposed
[illegible] top.

Loc 4. East of Farmville up a road not on the map.

[illegible] ft [illegible] well.
28 ft [illegible] clay shale
31 ft [illegible]
5 ft 3 in [illegible]
15 ft 6 in Shaly shale [illegible]
16½ ft [illegible] Bedford [illegible]
5½ ft [illegible]
Blue shale

Loc 5 East of McGuyer's Creek Lime

4 ft Bedford limestone
13½ ft Blue shale
7½ ft [illegible] Stonehenge
7½ ft [illegible]
[illegible] the [illegible] clay.
[illegible] of [illegible] beds
[illegible] covered
[illegible] Bedford [illegible]

2½ miles directly west of Chamberlain, [illegible] road to Hills Bridge
Bedford, [illegible]
10 ft 3 in Covered
[illegible] well exposed
13½ ft Shaly [illegible]
25½ ft [illegible] forty [illegible]
[illegible] well [illegible] fossiliferous
[illegible] conditions
[illegible] Company
Blue shale fragments [illegible]
[illegible]

Loc 7. At the Chalybeate Spring, 1½ mi. NE of Postoffice John Helvison's house. The contact of the Blue shale with the upper Bedford is well shown, and there is no doubt about the absence of the West River.

Section of Highland Street Bridge
Specially prepared for the Public

Top of Embankment

5 ft soil
5 ft blue argillaceous
1 ft [illegible] compact [illegible]
+ Top.

1 ft 6 in [illegible] argillaceous [illegible]
[illegible] compact [illegible] (7 [illegible])
2 ft 2 in [illegible] compact [illegible]
[illegible] 11 feet [illegible]
face very [illegible]
10 in. dark [illegible] compact [illegible]
3 ft 2 in dark [illegible] compact
2 ft dark compact [illegible]
1 ft 6 in [illegible] Portable [illegible]
[illegible] Third [illegible]
[illegible]
[illegible]
[illegible]
[illegible]
[illegible]
4 ft 6 in [illegible]
[illegible]
[illegible]
[illegible]
[illegible]
3 ft 3 in [illegible]
[illegible]
[illegible]
6 ft 10 in [illegible]
[illegible]

5 ft [illegible] light gray [illegible]
[illegible]
3 ft 6 in [illegible] light gray [illegible]
[illegible]
11 ft [illegible]
[illegible]
[illegible]
[illegible]
[illegible]
[illegible]
1 ft 3 in [illegible] compact [illegible]
1 in [illegible]
1 ft 11 in [illegible]
[illegible]
3 ft [illegible]
[illegible]
[illegible]
[illegible]
[illegible]
[illegible]
[illegible]
3 in [illegible]
[illegible]
14 ft [illegible]
[illegible]
[illegible]
[illegible]
[illegible]
[illegible]
[illegible]
[illegible]

3 in

9½ yds.

10 ft

31

Along [illegible] SE of [illegible]
[illegible]
[illegible] Ld.

1 ft [illegible], Slightly [illegible]
8 ft 6 in [illegible] 15" [illegible]
1 ft 6 in, fossiliferous limestone
10 ft Slope [illegible]
[illegible]
9 in [illegible]
8 ft 9 in [illegible]
[illegible]

Loc 8 Along RR to [illegible], about one mile [illegible] of [illegible]
[illegible]
1 ft 5 in [illegible]
14½ ft [illegible]
15 ft [illegible], with 2 inch [illegible] about 1 ft 5 in [illegible] of Bedford [illegible] Bedford [illegible] There is [illegible] Bedford [illegible] 17 & 18.
[illegible] Vol. 12

ft [illegible]
[illegible] Tournaisian,
[illegible]
[illegible]
[illegible]
[illegible]
[illegible]
[illegible] with [illegible]
ft [illegible]
ft [illegible] sh,
[illegible]
[illegible]
ft [illegible] Tournaisian,
[illegible]
[illegible]

[illegible]
[illegible]
[illegible]
[illegible]
10 in [illegible]
3 in [illegible]
2 ft 6 in [illegible]
57

Cunningham

Along [illegible] just S.E. of [illegible]
[illegible]
[illegible] dry [illegible].
1 ft [illegible] [illegible] [illegible]
[illegible] [illegible]
1 ft 6 in. fossiliferous limestone.
10 in. Sandy [illegible]
Sandy [illegible]
9 in. [illegible]
9 ft 9 in. [illegible]
[illegible]

Dec 8 Along RR to R[illegible], about one mile [illegible]
B[illegible]
1 ft 3 in. yellowish clay.
14½ ft [illegible]
15 ft B[illegible], with 2 [illegible]
[illegible]
[illegible] B[illegible]
[illegible]
[illegible]
[illegible]
[illegible]
[illegible] B[illegible] [illegible]
[illegible] 17 ft
[illegible] 12

S > see bottom of page
6 in. ss, [illegible]
12 ft 6 in. Brownish clay shale
9 in. [illegible] fossiliferous, [illegible]
21 ft [illegible]
2 ft [illegible] ss, [illegible]
[illegible]
[illegible]
2 1 ft [illegible] Blue [illegible]
6 in. Blue [illegible] ss.
3 ft 9 in. [illegible] Blue [illegible].
7 in. [illegible]
[illegible]
[illegible]
11 ft [illegible]
R [illegible]

30 ft [illegible]

of page
11 ft [illegible]
4 in. ss [illegible]
10 in. brownish sh, [illegible]
3 in. ss, [illegible]
2 ft 6 in. brownish clay shale
S

Sec. 9. A vein appears south of Carey Limited, 1½ miles west of Fairbanks near mouth of Cripple creek.

3 ft [illegible] shale, [illegible] sandstone, shale at top
1 ft 4 in fractures
ft ss, shaly, Tarramine
8 in shaly ss. bituminous
1 ft 11 in ss. fractures
1 ft 2 in fractures
1 ft 4 in ss. fractures
3 in fractures
1 ft 6 in ss. slickensides
[illegible] in fractures
2 ft ss. slickensides
7 ft 9 in interval covered, partly clay
? Smokey black shale top
10 ft 1 in smokey. Top cut [illegible]
19 ft 6 in Bedded Carey Mechanism [illegible]

Sec. 10. Section NW of Carey's mine beginning at the Library Angles in the upper part of the Ruby Vein to Sohna Steam to Lode land. Drift is a stringy drift and depth [illegible]
On Carey's land [illegible]

Section, at first trestle south of school house, ½ mi. N of Rogers and Jennings stake in Mechanicsburg [illegible]

Top
6 in. [illegible] Shale f g. ss, fractures
6 in. [illegible] shale f g. ss.
2 ft 10 in. Shale dg. + arenaceous sh.
1 ft 9 in covered.
[illegible] top of Smokey
16 ft 6 in Smokey, black fragile. Conformed and shale, inferior half fractures covered.
Bank of ex f. [illegible] in Chinamen River OR R, at forest trestle south of school house.

J. M. Cassidy.

Sec 12, T 17 N, R 5 W of Blackwater Meridian, Morgan County,

Cover = Probably the formation of Morgan

13 ft if some sandstone limited on the top this is most likely, probably shale decorated with Morgan

3 ft 6 in Sandstone fossiliferous light gray to white, thin bedded shale inclusions

3 ft Mostly shale, brown with bitumen

2 ft [illegible] light gray

[illegible]

2 ft 5 in [illegible]

[illegible]

1 ft 7 in Covered

At Kresek 1 1/2 mile distance N of Y, Sec 12, 1 1/4 N of Blackwater Station

Covered

5 ft Fossiliferous shales, medium at bituminous coaly equivalent to Fossiferous layer, dominant yellow. Possibly [illegible] weathering

2 ft 7 in [illegible] shale

11 ft. Sandstone, light, with shale partings, light in [illegible] 12 ft further north

4 ft 7 in Fossiferous [illegible] light gray to white

2 ft 6 in Shales with sandstone layers, = 3 ft shale further north

1 ft 9 in Shale rolled by [illegible] compacted [illegible]

4 ft. Fossiferous ledges blanket gray fossiliferous [illegible] in [illegible] no [illegible]

9 ft 6 in Covered

Smoothly [illegible]

[illegible]

At Morgan, on the [illegible] the [illegible] about
45 feet above the [illegible] river.

[illegible] on [illegible] Southworth's [illegible]
N E of [illegible]

yellowish brown limestone.
- ft 6 in Marble [illegible] light
4 in open [illegible] clay.
[illegible] 2 in [illegible]

13 ft [illegible] in [illegible] limestone, [illegible]
ledge thin [illegible]
2 ft Nodular shaly limestone
with [illegible]
[illegible]
2 ft [illegible]
varying [illegible]
[illegible]
[illegible]
4 ft [illegible] the [illegible]
[illegible]
[illegible]
[illegible]

[illegible] ridge
[illegible] west of [illegible] by.
There evidently is a strong unconformity between the [illegible] and the underlying shales.

{[illegible] shale
{[illegible]
57 ft 6 in covered.
[illegible]
19½ ft [illegible] yellow [illegible] brown [illegible]
4 ft covered.
Coal Blossom.
12 ft 7 in covered.
{[illegible]
3 ft – [illegible] grey limestone.
3 ft 10 in [illegible]
2 ft 3 in Nodular limestone with [illegible]
[illegible]
1 ft 4 in Thin bedded light grey limestone,
partly covered
6 ft {[illegible] yellowish
[illegible] covered.
[illegible] shale.

[illegible]

B) [illegible]

C) [illegible]

D) [illegible]

E)

B) [illegible] Lands W. of Boston
[illegible] 300 [illegible] Chapter
15 - 20 [illegible]
[illegible] by Charles [illegible]

F) [illegible] made [illegible] a deep
[illegible] of [illegible] [illegible]
the Cal & R.R.

1 ft [illegible]
2 ft [illegible] Boston
[illegible]
[illegible]
[illegible]
[illegible] the top.
Top of Ridge [illegible]
2 ft stratum of light brown,
with chert nodules inside.
1 ft 3 in stratum light brown,
fossiliferous
2 ft 6 in [illegible] light brown,
4 in. chert in [illegible] flat lines
4 ft 6 in [illegible] light brown with the [illegible]
+ [illegible] clay [illegible].
10 in. [illegible] dark [illegible]
stratum with [illegible] flank
phosphorite nodules + flat
[illegible]
7 ft 6 in [illegible]

G. [illegible]
[illegible]

12 ft [illegible]
5 ft [illegible]
[illegible]
[illegible]
[illegible]

35 B. [illegible] Lands [illegible]
30 [illegible]
[illegible]
[illegible]
[illegible]

H. [illegible] of [illegible]
[illegible]
10 ½ ft "[illegible] clay?"
[illegible]

½ mile S E of [illegible] mill, on road to [illegible]

R 4 ft 6 in [illegible] light gray [illegible].

[illegible] spring [illegible]

3 ft [illegible] perpendicular cherty [illegible]

9 ft [illegible] light gray & cherty

1 ft 2 in [illegible] bedded light gray limestones

4 ft yellowish limestone with [illegible].

2 ft { [illegible] [illegible] [illegible]

4 ft { [illegible] section, apparently [illegible], [illegible] [illegible] shale.

1 ft 6 in covered

11 ft green [illegible] shale. [illegible].

N.E. [illegible] exposed [illegible] section.

37½ ft shales.

[illegible] at top.

2 ft limestone with thin [illegible]

15½ ft shales with [illegible]

20 ft limestones, section [illegible]

11 ft covered.

4 ft 2 in { [illegible] cherty limestone, [illegible] cherty [illegible] thin layer

R 7'

¼ mile west of [illegible] boundary line on the road from [illegible] to [illegible].

12½ ft covering ?

2 ft limy shale, [illegible], Ohio shale.

The formation is splendidly exposed east of the county line, less than a mile northward.

One mile from [illegible] on road [illegible] the [illegible] 38 ft high [illegible] the [illegible] layers. The [illegible] of this 38 ft section [illegible] of 8 feet is covered. One [illegible] and [illegible] fragments [illegible] up 35 feet above the [illegible].

Key Construction of Grist Mill on Crab Tributary of Potomac in Hardy County West Virginia

250-300 long along a

admit:
200 Shed Roof on the Mill

300 Dimension Lumber & Boards
Grist Mill Machinery

50-100 Logs for sawed frame & hewed frame

2 x 5 [illegible]
[illegible] Differences
[illegible] E [illegible]

Foundation Wall 200 [illegible]
13 ft 9 in [illegible] Water wheel pit
4 in Covered [illegible] shaft [illegible]
Shaft comfort code, so, weather tight
3 ft 8 in Pen opening above at base
4 ft 4 in [illegible] Water wheel
Smaller shaft [illegible]
E G. Deselect and [illegible] 200 [illegible]
10 ft Sweeping slide
4 ft 10 in Water [illegible]
18 ft 6 in [illegible]
[illegible]
[illegible] 3 [illegible]

[illegible] Mr. E C [illegible]
[illegible] Water [illegible] 32 in [illegible]
[illegible]
4 ft 3 in [illegible]
5 ft 4 in [illegible]
[illegible]
8 ft 7 in [illegible]
[illegible] Water [illegible]

[illegible]

Sec K. along the Huffsmith road
Road between Huntsburg + Jefferson
ville, 5 mile east of Slate creek.

2 ft 10 in. Massive ss stratum. Transition
2 ft 3 in Clay shale
11 ft Sandy shale
4 ft 2 in Bedford-Berea sandy shale dark
31 ft 6 in Chert shale

On Clay City road 2 miles S of
Jeffersonville, at crossing northwest
Fork of Sycamore creek,

6 ft Bedford shale
more sandy than below shale
11 ft 6 in Sandstone massive argillaceous
6 in Coffee layer.
3 ft 2 in Berea? sandy argillaceous
11 ft Concretionary Chert. Silurian
Clay at top.
2 in Black carbonaceous shale
8 in Yellow argillaceous shale
8 in Gray to brown argillaceous shale
1 ft Strong argillaceous limestone
Strong yellow limestone

Sec M. 100 yds NW of forks of Sycamore
and Clay City roads, about 4 mi.
SW of Jeffersonville.

8 ft Shale (Complete)
3 ft 8 in Clay shale
6 ft 6 in Sandy shale
2 ft 2 in Bedford-Berea argill. shale.
38 ft Chert shale
Bonal Creek.

R. Thin A the big residual layer seen
SW of Olympia on the ridge
Olympian Springs Pa. Quartz in
34 rocks from Sycamore, residuals
in weathering shale.

[illegible]

5 ft 6 in [illegible]
[illegible]

17 ft 2 in
added
32 ft
49 ft 2 in
taken in

16' 6"
39' 6
56

8
14 2
39' 6"
61 8

64
47' 6"
1 6 6

Hornback [illegible] sect. on
[illegible]
[illegible]
[illegible]
[illegible] Hornback [illegible] includes
[illegible] 47 ft 6 in
[illegible] R [illegible] which 6"
[illegible] 1. R.
[illegible] of Hornback [illegible] includes
20 ft 8 in [illegible] 35 ft [illegible]
[illegible] R.
28 [illegible] ft [illegible] R
[illegible] [illegible] of [illegible]
13 [illegible] 21 ft [illegible] l,
[illegible] R [illegible]

[illegible]
[illegible] 2nd [illegible]
[illegible] 2 ft [illegible]
[illegible] 3rd [illegible]

[illegible] 3 ft
[illegible]

[illegible]
[illegible]
[illegible]
[illegible]
[illegible]
[illegible] as [illegible]

3 ft [illegible]
[illegible]

16'	6"
39'	6
56	

	8
14	2
39'	6"
61	8

64	
47'	6"
16	6

Front and rear recess on chamber

F 14 S elevation

14 ft 2 in Minute gauge

Approximate at Hydraulic center includes upper & lower stoplog slots from 47 ft 6 in above measured R to 4 ft above measured R.

B 7 1 Wall of foundation includes [illegible] 20 ft 8 in to 35 ft above Mean [illegible] called R.

B [illegible] 39 [illegible] 31 ft [illegible] measured R

Straight [illegible] [illegible] [illegible] [illegible]

B [illegible] 13 and 21 ft above measured R called R = Straight [illegible] Rhyne [illegible]

39 ft 6 in. [illegible] Straight [illegible] follows [illegible] 2nd [illegible] All included [illegible] 2 ft of [illegible] stoplog

R = 2 ft [illegible] measured R [illegible] 3" [illegible]

17 ft 7 in [illegible]

32 ft [illegible] 4th [illegible] 3 ft [illegible]

2 ft 6 in [illegible]

11 ft 9 in [illegible]

3 ft [illegible]

13 ft [illegible]

3 ft [illegible]

Quite marked fault. Southern Pacific
Railroad. Black oil stained lime-
stone west of bridge. Passing through
hills to north. 2½ miles SE of point
where Oil & Springs road turns
off & 1⅛ miles SE of where Jefferson
Creek road turns off.

Simulatte clay.

9 ft 3 in. [illegible]
2 in. Brown pebbly sand.
1 ft 5 in. [illegible]
2 in. [illegible]
[illegible]

On same road as preceding,
3/4 mi. from [illegible] a short
distance N of where the
Cupeno road turns
off.

Simulatte.

6 ft [illegible]
2½ in. 3 in. Brown Bedford
[illegible] fossil plant stems
[illegible] fragments
calcareous shell

Starting by
Section in highway which ex-
tends up Alvarado creek, one
mile + approached River Drain
bridge, at northern edge of
Stratum.

16 ft 6 in. Green argill. shales, with
fragments of ferruginous
nodules,
2 ft 5 in. Black compact nodu-
lar stratum of calca-
reous sa. Cut bridge.
3 ft 9 in. Black arg. shales
Buena Vista
4 ft Black flexible carb.
shale, Sunbury Notice
Base of syncline.

Section of hill along highway at the head of Willow Creek, Hill is called Willow Mountain, about 3 miles N of Stanton.

Shown emplacement

Top of exposure near top of hill,

70 ft. Mostly covered, some light grey bituminous shale

32 ft. Mostly covered, some rather firm grey shale, which weathers yellow

---

67 Practically covered, some shales and 2 or 3 thin coals, lignite, fragm.

39 ft 6 in. The two or three top strata calcareous, fine grained buff so, with not distinct bedding planes but apparently massive, and which weathers to thin slabs, fine grained sandstones. Jarosite coating only.

24 ft Intermediate fine grained buff so, with considerable white, and shaly so. between. Jarosite.

370 ft Barometer. Mostly covered, some arenaceous shale - SW Center

Bottom of hill, no shale

150 ft Barometer - Mostly covered. Occasional exposures appear on ridges. Cutting Ledge.

Section of Lime Deposit, at residence of Lewis Faulkner, 1 mi NW of Stanton.

Soft bluish shales above
1 ft 3 in, Buff fine grained stratum of cellular nature, weathers into large flat rounded, lily pad ledge,
2 ft 11 in, soft blue argillaceous sh.

6 ft 5 in Smutty sh.

7 in Bluish arg. & calc. Carbonaceous shale, Burned Brown,
14 ft 6 in Calcareous sh.

Base of exposure,
19 ft 9 in, Covered,

Highway level at the lane,

Section good.

Red River Force Tube
2½ miles of Marion station and below which it runs into Red River.

Top of exposure along river bank,
6 ft 6 in Clay in irregular formation
3 ft 4 in Sandy clays in Drift
3 ft 5 in Gravel in base of section.

[illegible] Cryptozoon [illegible] and ferruginous nodules, bed of Red River [illegible]

Directly S of Natural Bridge
Section in road up to the
bridge.

Top of [illegible]

38½ ft [illegible]

17 ft [illegible] formerly at top of [illegible]

2 ft [illegible]

25 ft [illegible] of [illegible] but
not lithographic [illegible]
Top of [illegible] [illegible]
[illegible]

Wheelhouse + [illegible] Quarry

14 ft [illegible] [illegible]
2 ft [illegible]
1 ft [illegible]
t. 25 ft 3 in [illegible]
Lithographic [illegible]
b. 25 ft [illegible] at Nat Bridge

Wheelhouse [illegible] Quarry
[illegible] Section [illegible] Road
of [illegible] Bridge [illegible]

R

[illegible]
12 ft [illegible]
[illegible]
2 ft 2 in [illegible]
4 ft 3 in [illegible]
[illegible]
[illegible] Bed forming a large [illegible]
[illegible]
4 ft 4 in [illegible]
2 ft [illegible] at edge of [illegible]
2 ft Limestone layer into chert
represented as L the [illegible]
4 ft Chert. Formerly [illegible]
[illegible]
8 ft 9 in green [illegible]
[illegible]
2 ft [illegible]
1 ft 9 in [illegible]
2 ft 1 in [illegible]
4 ft 9 [illegible]

R

Winchester Mo. 1½ of Jackson courthouse
1 ft Yellow clay of St Louis 1 ft.
Logan 60½ ft covered slope
17 ft Rather obscure
24 ft
17 ft

69½ ft

1 ft
5 ft
ft
3 ft
2 in
3 in
6 in
2 in
5½ in
94½ ft

370 ft

② Morrisonian grading
5 ft yellowish [illegible]
[illegible]
S <
fine sand grading
layers good for [illegible]. [illegible]
7 ft 4 in Hard limestone in horizontal
[illegible]
[illegible]
[illegible]
[illegible]
8 ft 9 in Massive light gray [illegible]
1 ft 2 in. light gray l. [illegible]
1 ft light gray l.
* 8 ft 4 in massive light gray l. with
large chert masses
1 ft 4 in l. fine gray l. with [illegible]
[illegible]
1 ft 4 in light gray l. thin layers interbedded
with the gray limest.
[illegible]
3 ft 2 in Massive yellowish l. very fine grained
6 in yellowish f.g. l. splitting into [illegible]
? in [illegible]
several layers.
1 ft 2 in yellowish f.g. [illegible]
1 ft 6 in yellowish [illegible] massive.
8 in [illegible]
7 in [illegible]
? in Yellowish paper shale [illegible]
medium grained l. distinctly porous
7 in distinctly [illegible]
1 ft fine grained light gray massive l.
6 in greenish [illegible]
9 in massive light gray l.
2 <

Moravian gravity,

①

R >
3 in yellowish soft l.
5 in yellowish f.g. l.
1 ft 11 in yellowish f.g. massive l.
1 ft 7 in yellowish f.g. [illegible]
1 ft 2 in yellowish l. splitting
2 ft 3 in Gray clay shale.
Spring Creek, 1½ ft [illegible]
[illegible]

shady, slightly sandy shale
6 in Yellowish brown and brownish
7 ft Clay shale
1 ft yellowish brown and brownish
27 ft 6 in Shaly sandstone and shale,
5 ft of impure limestone in the locality
3 ft limestone, crinoidal and sandy
12 ft sandstone ft. sub ft.
x 1 ft 3 in gritty limestone in bedded by x
gritty clay = ft sandstone fine
and not good to gritty into layers
but [illegible] locally,
weathers into irregular layers
20 ft 11 in, Massive greyish, almost
medium grained, hard, hard.
{ Rather fine grained
4 ft 6 in { Massive very hard, hard, shaly
up in irregular horizontal layers
*1 ft 10 in greenish fine clay layer
2 ft 2 in { Strong fine grained light blue
fine crystal,
11 in light brown medium grained,
5 ft 4 in Whitish medium grained
breaks up irregularly into large pieces
2 ft 3 in Light blue medium grained
6 in Light blue medium grained
{ 1 ft 2 in. clay shale
10 in { Thin layers of brown medium
6 ft 9 in [illegible]
[illegible] up in [illegible]
into 20, 26, 8, 2 and 25 layers

S

46 ft 3 in Kaskaskia,
25 ft 5 in St Genevieve,
1 ft 10 in fine clay,
37 ft 1 in, Upper St Louis
8 ft 9 in Shaly l. (Fitchburg?)

Underlying 5 ft 2 in of top of Kaskaskia,
Pentremites 7 ft " " " "

B. Approximately [illegible] Sections

C. With [illegible] Pentremites especially
[illegible] and small gastrs

Immediately S of [illegible] village
south of [illegible] Fork, in [illegible] township
[illegible] common, [illegible] about
20-30 feet above the road level.

About [illegible] miles south of [illegible],
in [illegible] and [illegible]
[illegible] common near crest of hill,

About 1 mile before reaching Kidd's
Fork, a short distance beyond Joe
Sneed's at the [illegible] and
[illegible] in the lower hills the
[illegible]
is found in creek bed.

Along Tygarts creek 100 yds N of Kidd['s]
store, the Devonian shale upon
the edges of [illegible]
[illegible]
[illegible]
another [illegible] Then
fossils were [illegible] along the
[illegible]
[illegible]
found [illegible]
[illegible]
[illegible]
Devonian [illegible] 8 inches [illegible]

East of Humphrey [illegible]
[illegible] NE [illegible]
[illegible] on a [illegible] the [illegible]
[illegible] clay rock [illegible]

In a steep gully N of road
West of house of John Brown, 3 mi NE of [illegible]
A [illegible] of base of Cuyahoga
38 ft Ohio shale (+ Sunbury?) [illegible]
65 ft [illegible] Unfossiliferous
Ordovician [illegible] as at last
locality.

At the base of the Ohio shale there
is, in descending order
5 in [illegible] shale, greenish
6 in shaly sandy rock. This
leaves for the Ohio shale section
a thickness of 37 ft 6 in. The
underlying part is [illegible]
[illegible] and
[illegible]
the Cumberland River.

---

100 ft N of [illegible] of second gully,
[illegible] of house of [illegible] Napier, 1¾ mi NE of [illegible]
J. J. [illegible]
1 ft. Ohio shale
5 in [illegible] sandy [illegible]
27½ ft Ordovician clay rock weathering to
rubble [illegible]
[illegible]
[illegible]
1 ft 2 in, [illegible] abundant
5 [illegible]
[illegible]
[illegible]
[illegible]
[illegible] and [illegible]
About 30 ft [illegible]
[illegible] west of house of [illegible]
[illegible]

4½ miles W of Fort Lincoln in the [illegible] Rocky [illegible] The land [illegible] reach the [illegible]

Two miles farther west the Limnella Limestone should [illegible] be full of [illegible] and a few specimens of Phillipsinella [illegible]

Alluvial from Dunnville along South side of Lake Erie, 100 yds west of Pelleys Cemetery, 2½ miles west of Dunnville.

Olive shale, 1 ft. exposed, to [illegible] sandy at base, [illegible] 3 to 4½ in sandy limestone [illegible] dark grey to nearly black. Dolitic [illegible] stems and [illegible] species [illegible]

The top of the underlying [illegible] light grey [illegible] contains Dolitic [illegible] stems [illegible] the length and [illegible] they were [illegible] belongs to the [illegible] and to that exposed north [illegible] 10 miles south of Dunnville.

On Columbia & Stanford road.

3/4 mi. west of intersection of creek at junction of Indian Valley Branch in road west of Dunmore, in S corner of Green County.

2 ft. Black shale.
Small phosphatic nodules.
8 in. Black shale.
Bituminous
Very numerous phosphatic nodules
37 ft. 6 in. Black shale, fissile,
6 in. to 12 in. indurated Black shale showing at base of clear shale, as it is here. Indications of differential weathering
6 in. Sandy shale with black shale laminae in it. Dictyonema sparse. Some [illegible]
3 ft. 6 in. Fissile very broken black shale, [illegible] very weathering to brown, with Dictyonema [illegible] and a few by the following [illegible], also a [illegible] by Transition.

At Blue Creek, east of creek, about 200 yards in middle N of County line, south of Simon creek.
Blue Conglomerate with phosphatic nodules.
2 ft. Black shale.
Numerous phosphatic nodules [illegible]
6 in. Black shale
Phosphatic nodules concentrated [illegible]
38 ft. Black shale.
2 ft. [illegible]

2 ft. Black shale. Several rows of phosphatic nodules.
6 in. Phosphatic nodules.
2 ft. Black shale
11 ft. Covered
5 ft. Black shale, [illegible] nodules
2 ft. 3 in. Dermanat with Dictyonema, Pecten, [illegible], a [illegible] massive Graptolite.

[illegible]
[illegible]
Byssomychia radiata.
Platystrophia
Anomalorhynchus gigantea.

¼ mi. S of crossing of Danville-
Covington road over Dry Run creek,

Clay shale.
4 in, Indurated base of Clay shale.
1 ft 5 in, Dark sandy limestone with Dalmanella
and small [illegible] fragmental crinoids,
This is the sandy b. exposed between
here and Danville, & see in dock
in few cutting [illegible].
1 ft 4 in, limestone, hard, fine grained,
with Dalmanella crinoids, gray to blue,
2 in shaly limestone
Stratum 1 ft 6 in, limestone,
3 in chert horizon, partly broken,
1 ft 2 in cherty limestone
4½ in limestone splitting into [illegible]
layers.
Stratum 4½ in cherty horizon partly broken,
1 ft 4 in massive stratum of limestone,
6 in parting, partially [illegible]
Dev. [illegible] calcareous mud.
7 in greenish gray clay shale.
Cin 1 in [illegible] limestone [illegible]
[illegible]

near base of Richmond section
at numerous localities SE of
Gatesville, 12 mi. of Riley and
thence on for 20 Shelby Co.
5 in greenish gray clay shale,
2 ft 6 in [illegible] argillaceous lime-
stone in irregular layers, argil-
laceous at base. All but upper 6 inches
yellowish, fossiliferous. Fossils
missing most of the fossils at this
locality.
1 ft 8 in clay rock, [illegible] with
fossiliferous limestone in upper
3 inches of the stratum.
5 in shaly limestone, weathering into
small fragments.
8 in arg. limestone,
6 ft arg. rock [illegible] with irregular
thin layers, [illegible] in D.
[illegible] fossils.
4 ft 6 in covered.
Dry Run creek.

Indurated base of drift shale
half and in top 2 inches
with admixture of iron
1 ft 5 in massive dark blue limestone,
fat rounded blocks
5 ft 5 in massive dark blue limestone = B
5 ft
2 ft 5 in massive dark brown limestone,
8 in massive dark brown limestone
with dark blue fresh layers
top, Hebella,
1 ft 8 in massive appearing layer
1 ft 6 in covered
4 ft 6 in gray, weathering shaly,
11 ft 8 in covered = D
2 ft 9 in weathering rotten shaly
gray layer, dark blue, dense, fine E
several dense small blue limestone
layers with small fossil fragments
dense blue limestone with small yellow
weathering

B, with lightning spots and Favosites
with layers 3 to 3½ inch

C with Hebella = Phaenomedusa

E with Schizophoria = Lyon, Orange
3 fossil layers

About 1½ miles S of crossing of road
over Bannon creek, ½ mile by house
of W J Withers

On D the covered section,

3 ft 9 in covered
4 ft { analyzing part of section,
rather than gray, dark blue, rock
chippings
1 ft 3 in massive fossiliferous brown
1 ft 6 in covered,
6 in fine grained blue limestone
with rather thin shaly layers
in lower part

2 ft 9 in [illegible] the indurated
base of the [illegible] shale, resting directly
on dark blue [illegible] limestone of the
D [illegible]

At the Fish [illegible] [illegible] the black shale rests on Dev. limestone of which a 15 in. layer is exposed.

Base [illegible]

Top of bluff

The base [illegible] [illegible]

133 ft practically [illegible] near

harder [illegible]

[illegible] clay shale [illegible]

51 ft 3 in. Moderately [illegible] green

37 ft 6 in. [illegible] clay [illegible]

{in [illegible]

{at base of [illegible] 3-4

6 in. Abundant [illegible] nodules

23 ft 3 in. Black shale

Creek bed

[illegible] base of [illegible]

1 ft 4 in

nodules [illegible]

9 inches [illegible] black shale.

nodules [illegible] phosphate

21 ft [illegible] black shale.

[illegible] NE 1/4 [illegible] 100 yds [illegible]

[illegible] ville - [illegible]

over Casey Creek

Collected abundantly 2 miles west of Knifley, at home of [illegible], at top of [illegible]

from sponge [illegible] [illegible]

with numerous fossils [illegible]

[illegible] even clay [illegible]

[illegible] nodules.

2 ft Sponges with numerous fossils, [illegible] granular [illegible]

may be [illegible] 2 ft but

[illegible] ft [illegible]

2 ft [illegible] darker blue [illegible]

[illegible]

[illegible] abundant

5 ? ft. [illegible] shale with few [illegible]

[illegible] [illegible]

[illegible] 5 feet [illegible]

[illegible].

Clay [illegible]

[illegible]

[illegible]

[illegible] 5 ft.

[illegible]

[illegible]

Similar beds directly north
line of Wilbur's mills here. 1/4
mi. S. of Acton. Acton
forest is at Tyngsboro S.H.

Ripple condition of forest
20 feet thick is exposed along
the Merrimac River below Lowell
1 1/2 miles south of mouth
of Nashua creek.

at house of Pinkney Cox about
2 1/2 miles [illegible] Merrimac on
road to Tyngsboro [illegible] of Pelham
brook, and [illegible] down in slate
creek (Clark's creek) [illegible]
Pelham brook. [illegible]
[illegible]

Black slate
2 in [illegible] 4 inches [illegible]
[illegible]
1 in [illegible]
5 [illegible]

On road from Merrimac to
Tyngsboro, about 4 miles from
Merrimac, NE of Peche P.O.,
about 1/4 mile, on McClure's
fork of Carey creek, on land
Wilbur Overstreet. Rock
below the Black slate
according to citizens at
Merrimac.

500 yds North of Dunlap's Store on Mapes's Rd. on Whipporwill branch of Robinson Creek, a short distance south of Samuel Jones Saltpetre.

Sandstone and shale

47 ft – Shale

11 in Sandstone, regular bedded, shale

[illegible] shale

1 ft [illegible] – 10 ft 7 in) of sandstone

Ledge of Dunkard High Dell Sandstone [illegible]

1 ft 7 in Sandstone, fairly massive & thick shale

[illegible]

[illegible] 4 [illegible]

[illegible] Oregon

[illegible] Oregon

The Dunkard [illegible] up this branch [illegible] at the [illegible] of Wm. Whipporwill. Coarse of the shale [illegible] from this [illegible]

Dunkard [illegible]

100 yds West of Rock, on road to Mercersburg, a rocky spot of land owned by Martha A. Tucker.

Tyler's [illegible]

3 ft 3 in Coal seam

5 to 6 inches Dunkard fire-proofing & rocky stuff belonging to base of Coal seam.

14 ft Shales of an olive color, [illegible] shale, [illegible] as at Mercersburg

---

A quarter of a mile south of Rock, directly opposite the house of Mrs. Overholt, in bed of McCloud branch of Robinson Creek.

Clay made in the dry bed of a creek [illegible]

2 inches [illegible] of the clay, [illegible]

4 inches [illegible] of black shale

and a [illegible] inch layer of zinc[illegible] sandstone, [illegible] all of the force belonging to the Coal [illegible] of the south,

6 in [illegible]

9 in Dunkard [illegible]

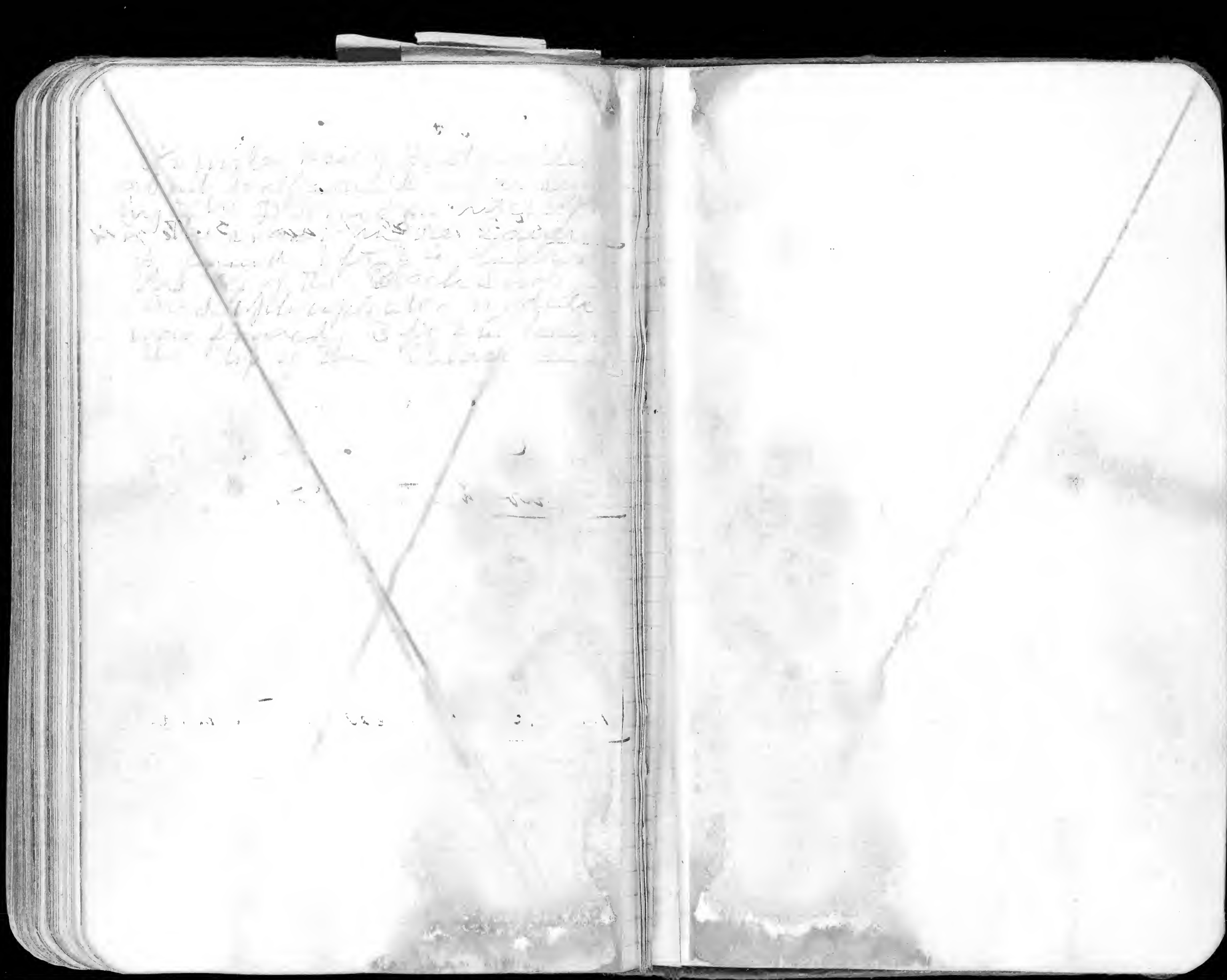
abundant fossils g'nat below the
Pleasantville bonzon.

20 yards S. of N. of Lower Clay Evans.
On second and bluff on east
side of creek 40 yards S. of Gillingham
at Pleasant Valley school.

20 ft [illegible]
[illegible] a lower bonzon
3 ft [illegible]
[illegible] Rhynchotrema [illegible]
[illegible] bonzon.
3 ft 10 in fine [illegible] on [illegible]

4 ft Ay. [illegible] 4-8 inches
[illegible]

4 in [illegible]



50 cts
50 cts
50 cts.
50 cts
50 cts
50 cts
50 cts Mrs Clark,
50 Mrs Hallahan
50 Miss Clara Donnell
50
50

Shreder ( )

2251

Vanching.